

Agrium Conda Phosphate Operations

Agrium's Response to EPA's Letter Dated August 31, 2005

Agrium asserts a claim of confidentiality with respect to the information contained herein. The information to which this confidentiality claim applies constitutes trade secret, privileged or confidential commercial or financial information, and/or information specifically exempted from disclosure by statute. Such information has been maintained in confidence by Agrium and is not reasonably obtainable by use of legitimate means without Agrium's consent, and Agrium intends to continue its existing practice of protecting the confidentiality of all information subject to this claim of confidentiality.

Public disclosure of the information for which Agrium asserts this confidentiality claim would cause substantial harm to Agrium's competitive position. Furthermore, the information to which this claim applies does not constitute emission data, standards or limitations within the meaning of Clean Air Act §114(c), or other similar relevant federal and/or state provisions. This information includes commercial and/or financial-related information regarding confidential, commercially valuable plans, processes or devices. Because Agrium's business is highly competitive in nature, the disclosure of any such information would substantially harm Agrium's business position by depriving it of an advantage inherent in such information, and/or by providing Agrium's competitors with the ability to derive a benefit from such information to Agrium's detriment. For example, certain information to which this claim applies potentially could be used by Agrium's competitors to project Agrium's future production and/or pricing patterns, to gain insight into Agrium's proprietary process designs and/or production and marketing strategies, and/or to negatively influence public/consumer perceptions of Agrium and Agrium products.

In the event that EPA, or the Idaho Department of Environmental Quality ("IDEQ") receives a request for public disclosure of any information contained herein, Agrium requests that EPA and/or IDEQ notify Agrium immediately upon receiving any such request, notify Agrium of any determination by EPA and/or IDEQ with respect to the confidentiality of such information, and provide Agrium an opportunity to comment regarding any such EPA/IDEQ determination prior to the public disclosure of the requested information.

BATES PREFIX	BEG BATES	END BATES	DATE	DOC TYPE	AUTHOR	RECIPIENT	DESCRIPTION
AGR-CBI	002860	002860		File Cover			Sub-File cover sheet, "Normal Operations" (documents located at AGR-CBI 002860-003004)
AGR-CBI	002861	002867	2/23/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Normal Operating Procedure for Operator Expectations
AGR-CBI	002868	002873	3/21/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, B-Vaporator Duties
AGR-CBI	002874	002879	1/15/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Changing Therminol Filter Cartridges
AGR-CBI	002880	002885	7/1/2005	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Evaporator Boil out-Pond Water
AGR-CBI	002886	002891	7/1/2005	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Evaporator Boil out-Enclosed Loop Water
AGR-CBI	002892	002898	3/20/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Normal Operating Procedure for Operator Expectations
AGR-CBI	002899	002904	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Evaporator Boil out
AGR-CBI	002905	002910	5/16/2005	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Draining and Flushing of the Nitric Tank
AGR-CBI	002911	002915	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Spa Evap Boil
AGR-CBI	002916	002920	4/6/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Water Blasting an Evaporator Tube Bundle
AGR-CBI	002921	002925	2/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Boiling a Lamella
AGR-CBI	002926	002929	6/1/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Sulfamic Wash the Spa Coolers
AGR-CBI	002930	002933	3/18/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, A-Evaporator Operator
AGR-CBI	002934	002938	3/13/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Normal Operating Procedure for DCS Operator
AGR-CBI	002939	002943	3/6/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Draining Therminol From the Super Unit Burner System
AGR-CBI	002944	002947	3/5/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Washout of a Tank or a Clarifier
AGR-CBI	002948	002951	2/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Condensate Washing Pumps in Evaporation Area

BATES PREFIX	BEG BATES	END BATES	DATE	DOC TYPE	AUTHOR	RECIPIENT	DESCRIPTION
AGR-CBI	002952	002955	4/6/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Water Blast Using a Pressure Gun
AGR-CBI	002956	002960	2/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Washing a Lamella
AGR-CBI	002961	002965	2/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, PSI Checking an Evaporator
AGR-CBI	002966	002969	2/24/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, How to Collect an Acid Sample
AGR-CBI	002970	002972	8/4/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Resetting Alarms in the MCC for the Deluge Sprinkler System
AGR-CBI	002973	002976	4/13/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Plate and Frame Heat Exchanger Cleaning
AGR-CBI	002977	002980	3/6/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Draining Therminol from the Super Unit Pump Associate Line
AGR-CBI	002981	002984	3/5/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, How to run an EMF Sample
AGR-CBI	002985	002988	8/5/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Annual Test of the Deluge Sprinkler System Alarms
AGR-CBI	002989	002992	3/5/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Reading a Specific Gravity on an Acid Sample
AGR-CBI	002993	002996	3/17/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, How to Spin Out Acid Solids
AGR-CBI	002997	003000	3/1/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, How to run a titration of the water samples
AGR-CBI	003001	003004	4/6/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Water Blasting Using the Foot Pedal and Snake
AGR-CBI	003005	003005		File Cover			Sub-File cover sheet, "Normal Operations" (documents located at AGR-CBI 003005-003144)
AGR-CBI	003006	003009	3/3/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Rodding out the Super Unit Product Piping into Oxidation Reactor
AGR-CBI	003010	003015	3/1/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Gather and take Samples to Lab
AGR-CBI	003016	003020	2/13/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Normal Operations-52% Acid Wash of Spa Unit
AGR-CBI	003021	003024	1/15/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Blowing out Super Unit product piping

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AGR-CBI	003025	003029	3/18/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, A-Evaporator Operator
AGR-CBI	003030	003034	2/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Trouble Shooting Floc Skids
AGR-CBI	003035	003039	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Condensate Washing of Oxidation Feed Line
AGR-CBI	003040	003043	10/2/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Collecting a Therminol Sample
AGR-CBI	003044	003046	3/19/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, A-Evaporator Normal Operations
AGR-CBI	003047	003050	3/1/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, How to Enter Readings on Data Entry Screen
AGR-CBI	003051	003054	3/5/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Cleaning Evaporators and Spa Evaporators Main Condensers
AGR-CBI	003055	003058	3/5/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Cleaning Evaporator Steam Jets
AGR-CBI	003059	003062	3/19/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, A-Evaporator Operator Duties
AGR-CBI	003063	003066	3/19/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, A-Evaporator Operator Duties
AGR-CBI	003067	003069	3/6/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Setting or Resetting Deluge Valve System
AGR-CBI	003070	003073	12/15/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Tank #13 Boil Out
AGR-CBI	003074	003076	3/18/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, A-Evaporator Operator
AGR-CBI	003077	003079	3/18/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, DCS Normal Operation of Evaporators
AGR-CBI	003080	003082	7/16/2002	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Entry to Oxidation Area
AGR-CBI	003083	003086	3/1/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Installing Trays to LGS Lamella Units
AGR-CBI	003087	003089	3/19/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, A-Evaporator Operator
AGR-CBI	003090	003092	3/6/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Using Plant Air to Blow Out Piping

BATES PREFIX	BEG BATES	END BATES	DATE	DOC TYPE	AUTHOR	RECIPIENT	DESCRIPTION
AGR-CBI	003093	003095	3/1/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Removing Trays on LGS Lamella Units
AGR-CBI	003096	003099	9/5/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Cleaning a Launder
AGR-CBI	003100	003103	2/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, 811-E Grade Control Floc Metering Pump Speed for 52%
AGR-CBI	003104	003106	2/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Preparing an Evaporator or Super Unit for Tube Bundle
AGR-CBI	003107	003109	2/7/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, How to Adjust 30%, 42%, and 52% Floc Mixing Machine
AGR-CBI	003110	003113	12/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, Boil Out of 30% Clarifier
AGR-CBI	003114	003116	2/13/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Monitoring Cooling Water Through Spa Cooler
AGR-CBI	003117	003120	2/17/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, 811-E Grade Control Floc Metering Pump Speed for 42%
AGR-CBI	003121	003123	12/11/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos Acid, High-High Alarm on Tk. #51
AGR-CBI	003124	003126	3/1/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, How to collect a Water Sample
AGR-CBI	003127	003129	3/18/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, DCS Normal Operation of Fume Abatement System
AGR-CBI	003130	003132	3/18/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, DCS Normal Operation of Grade Control
AGR-CBI	003133	003135	2/24/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, Assist on all Filter Washes
AGR-CBI	003136	003138	3/18/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, DCS Normal Operation of Enclosed Loop
AGR-CBI	003139	003141	3/18/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, DCS Normal Operation of Tank Farm
AGR-CBI	003142	003144	3/19/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Phos, DCS Normal Operation of Tank 21 and Tank 24 for Granulation Feed

Normal Operations



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid

Normal operating procedure for operator expectations.

Phos -Ops-01
02/23/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the operator expectations.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. All certified Phos operators.

Required Documents:

Tools and Equipment:

PPE	Hazards	Environmental Considerations

Normal operating procedure for operator expectations.

TASKS: List ALL tasks within this procedure.

1. Have a clear understanding of your expectations.
2. Importance of daily instructions.
3. Importance of standard operating procedures (SOP's).
4. Why we all need to do our part in order to get a job done.

NOTE

These are the expectations for all Phos acid operators except for the DCS operator and he/she has his/her own specific expectations procedure.

Steps		Key Points	PPE/Hazards
1.	Use proper radio etiquette.	Use proper language when talking on the radio.	
2.	Use of proper (PPE) Personal protective equipment.	Use of your PPE whenever required.	
3.	Use of proper lock out and isolation.	Use of Lock out /isolations whenever required.	
4.	Follow the beard or shaving policy.	Know and enforce all company policies with out being asked.	
5.	Follow the smoking policy.	Know and enforce all company policies with out being asked	
6.	Follow the Drug and Alcohol Policy.	Know and enforce all company policies with out being asked	
7.	Maintain a positive attitude.	Have a good attitude, set a good example for others.	
8.	Give clear honest communication.	Never assume anything, verify before doing anything.	
9.	Identify your limitations.	Know your own limitations and be willing to improve.	
10.	Write (MOC's) management of changes.	When equipment doesn't work take action to change it.	

Normal operating procedure for operator expectations.

11.	Work on continuous improvement.	Strive to be and do better. Be willing to learn all you can by cross training etc.	
12.	Step up and make decisions.	Be willing to make all decisions in your job with the support of your super visor.	
13.	Be willing to be coached.	Be open to being corrected or coached whether it's positive or negative.	
14.	Be willing to coach others.	Be willing to coach or help others. Be honest and constructive in your coaching. Do not be mean or unprofessional.	
15.	Maintain clean up through out the plant.	Keep your area clean and orderly with out being told. Show self-motivation. Have pride in your work and what you do.	
16.	Review the (Poop sheet) or instruction sheet every day.	Instruction for plant limitation, guide line, parameters, safety concerns or current and up coming events is documented here.	
17.	Review the Maintenance schedule.	Jobs for maintenance to be done that day or the next day are on here and will directly effect operations.	
18.	Review the E-Mail daily.	All of your information comes from here. Whether it's Memos, updates on current events, safety issues, changes on processes, or up coming meetings that you will need to	

Normal operating procedure for operator expectations.

		attend.	
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19.	Write or request that work orders are to be wrote on equipment.	Verify that all equipment is working right and if not be sure there is a work order generated to repair it.	
20.	Be committed to work order follow up.	<p>When ever Maintenance comes to you with a work order.</p> <p>1.Maintenance doesn't go to work on anything until you turn it over to them.</p> <p>2.Ask to see the work order first to verify the proper piece of equipment.</p> <p>3.Give maintenance your expectations of the job up front, Like you will need to test this pump before they leave to make sure it's going to work, also they will need to clean their mess up before you will sign the work order off and say the job is done.</p>	
21.	Do routine walk through of your area.	Make a routine inspection of everything in your area every hour.	
22.	Use barricades or danger, caution tapes with appropriate tags.	Where ever needed use the right	

Normal operating procedure for operator expectations.

		equipment to alert operators of any hazards that may be present.	
23.	Use S.O.P.'s on all jobs.	Follow and use all sops's, isolation/ lockout procedures on any job that you are doing. Access to these will be on the home page. You will need to be certified on all of them as well as do them step-by-step the way they are written. (NO SHORT CUTS)	
24.	Report all accidents or incidents.	All accidents and incidents need to be reported to your supervisor no matter how small they may be.	
25.	Give a proper relief.	You will need to make sure you give a good relief, be sure you take the time to communicate all events and document in the log book all events before leaving to go home.	
26.	Take the designated lunch and coffee breaks.	You are paid for a lunch break if you are an hourly operator so you will only get lunch if time permits. However you do have two 15-minute coffee breaks and no longer.	
27.	Commit to being safe.	Safety of yourself and other fellow Operators come first. Think Safe/Be Safe.	

Normal operating procedure for operator expectations.

28.	Log hourly readings on the Data Entry screen.	Refer to the how to enter readings on the Data Entry Screen procedure.	
29.	Trouble shoot and help resolve any problems.	Work with field operators, maintenance, electricians, contractors, or Engineering.	
30.	Activating the 333 system.	Assist other operators on emergencies.	
31.	Review the Lab analysis report daily.	Keep up on the control analysis for the Phos process.	
32.	All operators will comply with the Agrium Harassment Policy.	All Agrium Operators are expected to maintain Professionalism at all times.	

Training Notes:

1. Safety is the number one priority always.
2. Use of the standard operating procedures.
3. Use of personal protective equipment.
4. The need to follow company policies.
5. The importance of knowing your expectations.

Normal operating procedure for operator expectations.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures
PHOS

B-Evaporator Duties
Normal Operation of the Evaporators, Tank Farm, and
Tanks, 24, 13, & 21.

PHOS-Normal OP-01
03/21/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform normal operation of the evaporators, tank farm, and tanks 13, & 21.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. B-Evaporator certified.

Required Documents: Refer to the 30%, 42%, and the 52%floc mixing system.

Tools and Equipment: Radio communication, measuring rope and ball, acid dipper, Hydrometers, Graduated cylinder or stainless steel cylinder.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses with the foam frame backing.• Safety Toe Foot Wear• Rubber Gloves• Hearing Protection• Respirator.	<ul style="list-style-type: none">• Acid splashes• Chemical burns• Thermal burns• Inhalation of fluorine gas.	<ul style="list-style-type: none">• Spilled acid needs to be contained.

B-Evaporator Normal Operation of the Evaporators, Tank Farm and 24, 13, and tank 21.

- Rubber boots

TASKS:

1. Clear and concise radio communications.
2. Measuring acid tank levels.
3. Checking the specific gravity of the product acid.
4. Moving product Hoses at the distribution box.
5. Moving over flow hoses underneath the distribution box.
6. Opening and closing valves.
7. Condensate washing Evaporator feed pumps.
8. Flushing Lamella underflows.
9. Log readings on the computer.

NOTE

Any time you are at the Distribution box, or the tank farm area, a Respirator is required.

Steps		Key Points	PPE/Hazards
1.	Measure the tank levels 12, 18, 23, by. <ol style="list-style-type: none"> 1. Use of measuring ball. 2. Measure from the top of the tank down to the level of the liquid. 	Measure accurately every two hours. Anytime you're measuring from the top of the tank down to the liquid level of the tank, this is called a free board measurement.	
2.	Control the flow of the sludge tank (Tank 26) acid to the North 30% clarifier by. <ol style="list-style-type: none"> 1. Communicating the specific gravity of Tk.13 feed flow to the proper 42% Evaporator with DCS for the proper blend of sludge. 2. Adjust the sludge flow to the North 30%clarifier to maintain proper blend. 	The sludge to the North 30% is set on a ratio along with the total flow of the 30% acid from the filters.	
3.	Feed the proper 42% Evaporator from tank 24-A with product hosed to the tank 21 feed box.	Communicate with Granulation to maintain specific gravity if the product.	
4.	Verify that the 42% Evaporator is being fed from tank 13 has the overflow hose hosed back to the tank	Product is high in Cadmium.	

B-Evaporator Normal Operation of the Evaporators, Tank Farm and 24, 13, and tank 21.

	13 launder.		
5.	Monitor the Lamella feed and the underflows and flush as necessary.	To maintain product clarity of the Lamella feed acid.	
6.	Check overflow launders for buildup.	Clean as necessary.	
7.	Monitor the floc going to the 30% clarifiers.	Refer to how to adjust the 30% 42%, and the 52% floc mixing systems.	

NOTE

When the 42% and the 52% Evaporator acid products are being pumped to the 42% and the 52% clarifiers, acid samples for specific gravity of acid, will be taken from the Evaporators belly sample port spigot.

8.	Coordinate with the DCS operator to adjust the feed and steam flows to the Evaporators and the feed to the super units.	To achieve correct specific gravity (S.P.G) of the product acid.	
9.	Check the specific gravity of the product acid on all of the Evaporators steam chest pressures.	Log the hourly readings on the data entry screen on the computer.	
10.	Gather reading on the Evaporator steam chest pressures.	Log the readings every two hours, on the data entry screen on the computer.	
11.	Coordinate with the SPA operators, A-Evaporator, and DCS operator when filling the 52% acid decant tanks.		
12.	Coordinate with the SPA operators, A-Evaporator, and DCS operator when sending boil out water to the decant tanks.	To boil out the residue and the scale in the tanks.	
13.	Coordinate with the SPA operators to pump out the decant tanks residue.	To the Phos tank farm.	
14.	Coordinate with the SPA operators to pump out the car wash sumps.	To the Phos tank farm.	

B-Evaporator Normal Operation of the Evaporators, Tank Farm and 24, 13, and tank 21.

15.	Move the acid product hoses to the distribution box on the 42% and the 52% Evaporators.	To control the storage tank levels. Communicate with the A-Evaporator and the DCS operator.	
16.	Monitor the Evaporators overflow hoses by. 1. 42% overflow hose goes to tank 12. 2. 52% overflow hose goes to tank 18.	The distribution box Evaporator overflows.	
17.	Monitor the tank overflow hose by. 1. Excess tank overflow product goes to the tank 18 launder.	The distribution box tank section overflows.	
18.	Gather an hourly acid samples from the Evaporators and measure the specific gravity of the product.	Sample is taken from the belly sample port spigot.	
19.	Switching the Evaporators product to grade control from the acid product.	Coordinate with the A-Evaporator operator and DCS.	
20.	Switch Evaporator product to the tank farm from grade control.	Coordinate with the A- Evaporator operator, and DCS operator as a lockout/ tag out will apply here.	
21.	Switching the boil out water to the distribution box from the grade control splitter box wash line.	Coordinate with the A- Evaporator operator, and DCS operator as a lockout/ tag out will apply here.	

B-Evaporator Normal Operation of the Evaporators, Tank Farm and 24, 13, and tank 21.

NOTE

These next steps apply to the direction of acid flows to and from the distribution box. Too also, 42% Evaporators are fed with 30% acid and 52% Evaporators are fed with 42% lamella feed, or 42% storage tank acid.

22.	Feed the 42% Evaporators out of tank 12 by. 1. Using one of the six product lines off of the tank 12 pumps.	To control the feed in each box is done by adjusting the manual valves by the old 18-B filter.	
23.	Feeding the 52% Evaporators by. 1. The 42% lamella feed 2. The 42% storage tanks.	Tanks 18, 23, 11-A, and tank 41.	
24.	Switching Evaporators feed box overflow hoses to the proper overflow launder to. 1. Tank 12 2. Tank 18 3. Tank 23 4. Tank 24-A		
25.	Tie the hoses in the launder when switching Evaporator feed box overflow hoses.		
26.	Replace rope as needed.		
27.	Moving the 42% evaporator product hoses to. 1. To tank 18, 21, or tank 23. 2. To grade control splitter box.		
28.	Switching the 52% Evaporators product hose by sending product to. 1. Tank 47. 2. Tank 50.		
29.	Hosing up from the 52% overflow pump tank to tank 47.	For the super units feed.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid
Changing Therminol Filter Cartridges

Phos-Normal Operations-01
01-15-2004

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to change filter cartridges on the Therminol systems.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified.

Required Documents:

Tools and Equipment: Small container for holding hot (100 F to 150 F) therminol oil, New filter cartridges, Absorbent pads, Two labeled satellite barrels, 1 1/8" Wrenches.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Tyvek suit.• Face shield.• Rubber Boots.• Rubber Gloves.	Therminol can be hot.	Therminol spills need to be contained and reported.

Changing Therminol Filter Cartridges

TASKS:

1. Turning valves.
2. Handling hot material.
3. Lock out/Tag out.

NOTE

Allow pressure differential to slowly increase to 15[#] psig as the filter cartridge clogs up. At 15[#] psig, replace filter cartridges.

NOTE

The ideal time to change filter cartridges is during scheduled boil outs; however, the vessel can be isolated from system and cooled by letting it sit for 12 hours or until the Therminol has reached a maximum Temperature of 100°F. Steps 1-5 will allow you to isolate the filter system without shutting the Super Unit down.

Steps		Key Points	PPE/Hazards
1.	Close all four inlet and outlet valves, #4, #6, #7, and #9.	Refer to drawing.	
2.	Cool Therminol down to 100° F.		
3.	Lightly touch the top of the filter vessel to verify it is cool.		
4.	Lock out and tag out valves #4, #6, #7, and #9.		
5.	Bleed vents between valves into a clean bucket.		
6.	Place a clean bucket to catch the Therminol at both of the drains.	This is so the Therminol can be reused.	

NOTE

If there is no flow from the drain valves, remove the nipple from the ball valve and rod it out.

7.	Open drain ball valves #1, and #2 to relieve any pressure in vessel.		
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Changing Therminol Filter Cartridges

8.	Open vent valve and drain about one gallon of oil out of vessel through the upper drain.	This is to drop the level of Therminol in the vessel.	
9.	Remove bolts on top of vessel and remove lid.		
10.	Place absorbent pads on ground near vessel and have a bucket ready to receive the spent filter element.		
11.	Remove filter cartridge.	Use absorbent pads and the bucket to minimize the dripping of oil during the transfer of the cartridges to the satellite accumulation barrel.	
12.	Place absorbent pads in barrel.		
13.	Install new filter cartridge.	The bolts on the filters need only to be snug.	
14.	Put oil in the bucket in the inlet side of the filter vessel.		

NOTE

These gaskets are supplied in the VMI and are specific for this use.

15.	Install the filter vessel lid using a new gasket.	Use a 6" 300# Green Ring Flexitallic gasket.	
-----	---	--	--

NOTE

Double Wrench bolts in a star pattern and double check tightness counter clockwise.

Changing Therminol Filter Cartridges

16.	Remove Lockout/Tag out.		
17.	Open valves all the way slowly checking for leaks at the lid as the valves are opened.		
18.	Restrict flow of Therminol through vessel using the inlet globe valve #4.	To bring the pressure on the DPI indicator to 1 [#] psig.	
19.	Check the dp indicator each shift and record the reading on the DCS Data Entry Screen.		

NOTE

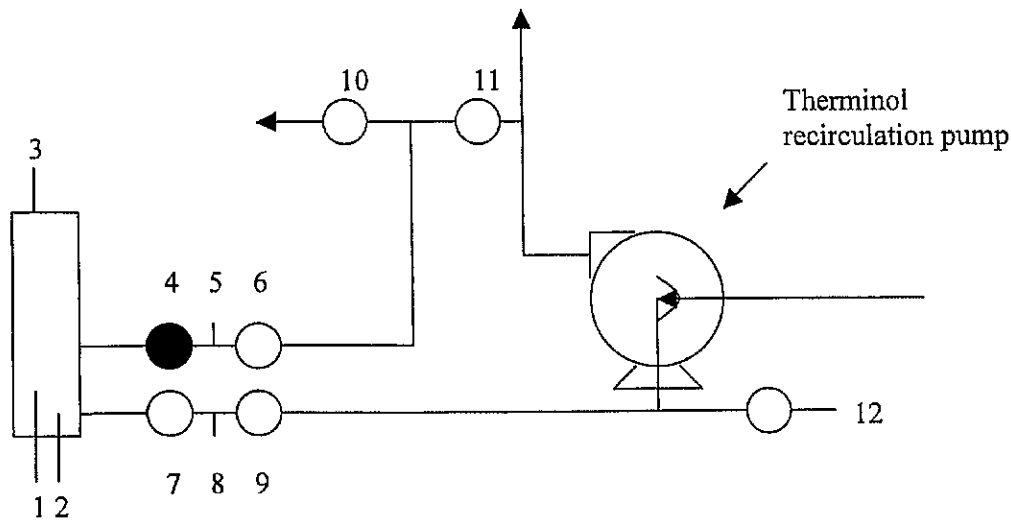
When satellite vessel gets full, move to 90-day storage area and get a new labeled satellite barrel.

Standard Operating Control Limits			
SOCL #:			
Deviation	Condition	Consequence	Action To Take
High/High			
High			
Low			
Low/Low			
Temperature			
Pressure	Over 15 lbs.	Filter is clogged and will not filter the Therminol.	Replace filter cartridge.

Changing Therminol Filter Cartridges

Training Notes:

Therminol filter vessel



- 1) Dirty chamber drain ball valve
- 2) Clean chamber drain ball valve
- 3) Vent ball valve
- 4) Inlet Globe valve (partially open)
- 5) Inlet Bleed
- 6) Inlet Gate valve (NO)
- 7) Outlet gate valve (NO)
- 8) Outlet bleed
- 9) Outlet gate valve (NO)
- 10) Gate valve isolates from storage tank (NC)
- 11) Gate valve (NO)
- 12) Recirculation pump drain gate valve (NC)

(NO = Normally Open)
(NC = Normally Closed)



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures
PHOS

Evaporator Boilout – Pond Water

PHOS-Normal Op-01

07/01/05

Reviewed by: All Phos Acid Crews

Date: 8/9/2005

Objective: To provide operating personnel with step-by-step instruction on how to put an Evaporator on Boilout.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified. Must be B-Evap Operator certified.

1. Maintain seven (7) day schedule for evaporator boilouts. Do not boilout if it has been less than six (6) days from the previous boilout.
2. Do not boilout more than the specified time. If the evaporator is not needed, cool to 100°F and hold. Recirculate. Leave Pond Water in the Evaporator.
3. Perform Enclosed Loop Boilouts every sixth (6th) boilout. Approximately every six (6) weeks.

Required Documents: Evaporator Boilout Logsheet

Tools and Equipment: Radio communication, hoses, Cam Lock Fittings.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns	<ul style="list-style-type: none">• Pond Water spills need to be kept in containment area.

Page 1 of 6

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AGR-CBI_002880

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Evaporator Boilout – Pond Water

TASKS:

1. Open and close valves.
2. Start/Stop pumps.
3. Handling of 3" Hoses.
4. Directing flows.
5. Monitoring temperatures.
6. Filling Evaporator with Pond Water.
7. Draining Evaporator off of Boilout.

NOTE

Evap has already been taken down. Once Tube Bundle has been blasted and doors installed, fill the Evaporator for Boilout.

Steps		Key Points	PPE/Hazards
1.	Remove locks from Feed Pump and energize breaker.	Can be done by the A-, B-Evap Operator, or the C-Utility Operator.	
2.	Notify B-Evap Operator to start the Evaporator Feed Pump.	B-Evap Operator will also verify Suction and Discharge Valves are open and that Wash Valve is closed. Feed Pump starts in the field only.	
3.	Notify B-Evap Operator to start filling the Evaporator with Pond Water.		
4.	Notify DCS Operator to set Feed Automatic to Manual at 100% open.		

NOTE

Leave the Half-Way Valve open, Suction and Discharge Valve(s) to Product Pump closed, and Wash Valve open.

Periodically verify that Evaporator is full by opening Suction Valve to Product Pump
Verify Pond Water is coming out of Wash Valve before starting Evap Circulation Pump.

5.	Close Suction valve on Product Pump.		
6.	Start Evaporator Circulation Pump.	Have DCS Operator start the pump.	
7.	Notify DCS Operator to set Pond Water Flow to 100 GPM.		

Evaporator Boilout – Pond Water

8.	Start Evaporator Condensate Pump.	DCS will verify Condensate Discharge Valve is open to the Seal Tank. DCS Operator has a stop ONLY on this pump.	
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NOTE

35" Steam Automatic Valve could leak by.

9.	Verify that Evaporator 35" Steam Auto is closed.	DCS Operator will verify.	
10.	Open Main 35" Steam Manual Block Valve all of the way.		

NOTE

DCS Operator will contact North Plant, East Sulfuric Plant, and PPA Plant (if using their steam at the time) before doing a steam start-up on the Evaporator.

11.	Begin steam start-up sequence to the Evaporator.	Communicate with DCS. DCS will initiate.	
12.	Close Half-Way Valve to Product Pump.	When ready to boil through the vent line. This will wash the scale off of the half way valve to reduce chances of damaging the diaphragm.	

NOTE

150° on the Evaporator is considered at Boilout temperature. Never let the Evaporator temperature exceed 195°. This will take rubber out of the Evaporator Vapor Head. Take necessary steps to meet control limits.

Log down time when Evaporator is at Boilout.

13.	Close Wash Valve on the Product Pump.	After Evap has boiled for six hours over the top.	
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Evaporator Boilout – Pond Water

NOTE

If Evap Product Hose needs to be moved at the Distribution Box, Product Pump needs to be locked out and DCS verified it will not start, before moving hose.

14.	Open Suction Valve to Product Pump.	Verify with B-Evap Operator that Product Hose is tied back to its own box.	
15.	Open Product Pump Discharge Valve all of the way.	Evap is now boiling through vent line.	
16.	Start Evap Product Pump.	DCS will start.	Keep Pond Water contained.
17.	Open Halfway Valve.	Evap will now be boiling back to itself.	

NOTE

Wash Product Pump and piping to Distribution Box for one hour. Chase acid out of the lines before switching the splitter to the ditch.

18.	Verify 42% Splitter Product Line is aligned to the Ditch.	Located on top of 42% Clarifier.	
19.	Open Product Pump Discharge Valve all of the way to 42% Splitter, and close the other Discharge Valve to the Distribution Box.	Boil to Splitter. Drain line for last hour of Boilout cycle.	Keep Pond Water contained.
20.	Dump the condensate to the seal tank.	DCS Operator will close.	
21.	Close Steam Automatic.	DCS Operator will close.	
22.	Close Manual Steam Block Valve.	Open Bleed Valve.	

NOTE

Evaporator needs to cool down to 100° or below before draining off of Boil.

23.	Isolate the Pond Water to the Evap Feed Box.	Done by B-Evap Operator.	
24.	Shut off all pumps.	Done by DCS Operator.	

Evaporator Boilout – Pond Water

25.	Hook up hose and drain Evaporator empty.	Be sure to put up barricades.	Pond Water needs to be contained.
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NOTE

In cold weather, blow out piping to prevent freeze-ups.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS

Evaporator Boilout – Enclosed Loop Water

PHOS-Normal Op-01

07/01/05

Reviewed by: All Phos Acid Crews

Date: 8/9/2005

Objective: To provide operating personnel with step-by-step instruction on how to put an Evaporator on Boilout.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified. Must be B-Evap Operator certified.

1. Maintain seven (7) day schedule for evaporator boilouts. Do not boilout if it has been less than six (6) days from the previous boilout.
2. Do not boilout more than the specified time. If the evaporator is not needed, cool to 100°F and hold. Recirculate. Leave Pond Water in the Evaporator.
3. Perform Enclosed Loop Boilouts every sixth (6th) boilout. Approximately every six (6) weeks.

Required Documents: Evaporator Boilout Logsheet

Tools and Equipment: Radio communication, hoses, Cam Lock Fittings.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns	<ul style="list-style-type: none">• Pond Water spills need to be kept in containment area.• Enclosed Loop Water spills need to be kept in containment area.

Evaporator Boilout – Enclosed Loop Water

TASKS:

1. Open and close valves.
2. Start/Stop pumps.
3. Handling of 3" Hoses.
4. Directing flows.
5. Monitoring temperatures.
6. Filling Evaporator with Pond Water.
7. Draining Evaporator off of Boilout.

NOTE

Evap has already been taken down. Once Tube Bundle has been blasted and doors installed, fill the Evaporator for Boilout.

Steps		Key Points	PPE/Hazards
1.	Remove locks from Feed Pump and energize breaker.	Can be done by the A-, B-Evap Operator, or the C-Utility Operator.	
2.	Notify B-Evap Operator to start the Evaporator Feed Pump.	B-Evap Operator will also verify Suction and Discharge Valves are open and that Wash Valve is closed. Feed Pump starts in the field only.	
3.	Notify B-Evap Operator to start filling the Evaporator with Enclosed Loop Water.		
4.	Notify DCS Operator to set Feed Automatic to Manual at 100% open.		

NOTE

Leave the Half-Way Valve open, Suction and Discharge Valve(s) to Product Pump closed, and Wash Valve open.

Periodically verify that Evaporator is full by opening Suction Valve to Product Pump
Verify Pond Water is coming out of Wash Valve before starting Evap Circulation Pump.

5.	Close Suction and Discharge valves on Product Pump.	There are 2 Discharge Valves.	
6.	Start Evaporator Circulation Pump.	Have DCS Operator start the pump.	
7.	Notify DCS Operator to set Pond Water Flow to 100 GPM.		

Evaporator Boilout – Enclosed Loop Water

8.	Start Evaporator Condensate Pump.	DCS will verify Condensate Discharge Valve is open to the Seal Tank. DCS Operator has a stop ONLY on this pump.	
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NOTE

35[#] Steam Automatic Valve could leak by.

9.	Verify that Evaporator 35 [#] Steam Auto is closed.	DCS Operator will verify.	
10.	Open Main 35 [#] Steam Manual Block Valve ¼ of the way.		

NOTE

DCS Operator will contact North Plant, East Sulfuric Plant, and PPA Plant (if using their steam at the time) before doing a steam start-up on the Evaporator.

11.	Begin steam start-up sequence to the Evaporator.	Communicate with DCS. DCS will initiate.	
12.	Close Half-Way Valve to Product Pump.	When ready to boil through the vent line. This will wash the scale off of the half way valve to reduce chances of damaging the diaphragm.	

NOTE

150° on the Evaporator is considered at Boilout temperature. Never let the Evaporator temperature exceed 195°. This will take rubber out of the Evaporator Vapor Head. Take necessary steps to meet control limits.

Log down time when Evaporator is at Boilout.

13.	Close Wash Valve on the Product Pump.	After Evap has boiled for six hours over the top.	
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Evaporator Boilout – Enclosed Loop Water

NOTE

If Evap Product Hose needs to be moved at the Distribution Box, Product Pump needs to be locked out and DCS verified it will not start, before moving hose.

14.	Open Suction Valve to Product Pump.	Verify with B-Evap Operator that Product Hose is tied back to its own box.	
15.	Open Product Pump Discharge Valve ¼ of the way.	Evap is now boiling through vent line.	
16.	Start Evap Product Pump.	DCS will start.	Keep Enclosed Loop Water contained.
17.	Open Halfway Valve.	Evap will now be boiling back to itself.	

NOTE

Wash Product Pump and piping to Distribution Box for one hour.

18.	Verify 42% Splitter Product Line is aligned to the Ditch.	Located on top of 42% Clarifier.	
19.	Open Product Pump Discharge Valve all of the way to 42% Splitter, and close the other Discharge Valve to the Distribution Box.	Boil to Splitter. Drain line for last hour of Boilout cycle.	Keep Enclosed Loop Water contained.
20.	Dump the condensate to the seal tank.	DCS Operator will close.	
21.	Close Steam Automatic.	DCS Operator will close.	
22.	Close Manual Steam Block Valve.	Open Bleed Valve.	
23.	Switch from Enclosed Loop Water to Pond Water.		

NOTE

Evaporator needs to cool down to 100° or below before draining off of Boil.

24.	Isolate the Pond Water to the Evap Feed Box.	Done by B-Evap Operator.	
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Evaporator Boilout – Enclosed Loop Water

25.	Shut off all pumps.	Done by DCS Operator.	
26.	Hook up hose and drain Evaporator empty.	Be sure to put up barricades.	Pond Water needs to be contained.

NOTE

In cold weather, blow out piping to prevent freeze-ups.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Agrium Operations

Normal operating procedure for operator expectations.

03/20/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the operator expectations.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor their areas of responsibility. The adjustments need to be made by the DCS operator with communication from the field operators.

Required Documents: Refer to Agrium Administrative Policies

Tools and Equipment:

PPE	Hazards	Environmental Considerations

Normal operating procedure for operator expectations.

TASKS:

1. Have a clear understanding of your expectations.
2. Importance of daily instructions.
3. Importance of standard operating procedures (SOP's).
4. Why we all need to do our part in order to get a job done.

NOTE

THESE ARE THE EXPECTATIONS FOR ALL AGRUM OPERATORS.

Steps		Key Points	PPE/Hazards
1.	Use proper radio etiquette.	Use proper language when talking on the radio.	
2.	Use of proper (PPE) Personal protective equipment.	Use of your PPE whenever required.	
3.	Use of proper lock out and isolation.	Use of Lock out /isolations whenever required.	
4.	Follow the beard or shaving policy.	Know and enforce all company policies with out being asked.	
5.	Follow the smoking policy.	Know and enforce all company policies with out being asked	
6.	Follow the Drug and Alcohol Policy.	Know and enforce all company policies with out being asked	
7.	Maintain a positive attitude.	Have a good attitude, set a good example for others.	
8.	Give clear honest communication.	Never assume anything, verify before doing anything.	
9.	Identify your limitations.	Know your own limitations and be willing to improve.	
10.	Write (MOC's) management of changes.	When equipment doesn't work take action to change it.	

Normal operating procedure for operator expectations.

11.	Work on continuous improvement.	Strive to be and do better. Be willing to learn all you can by cross training etc.	
12.	Step up and make decisions.	Be willing to make all decisions in your job with the support of your super visor.	
13.	Be willing to be coached.	Be open to being corrected or coached whether it's positive or negative.	
14.	Be willing to coach others.	Be willing to coach or help others. Be honest and constructive in your coaching. Do not be mean or unprofessional.	
15.	Maintain clean up through out the plant.	Keep your area clean and orderly with out being told. Show self-motivation. Have pride in your work and what you do.	
16.	Review the (Poop sheet) or instruction sheet every day.	Instruction for plant limitation, guide line, parameters, safety concerns or current and up coming events is documented here.	
17.	Review the Maintenance schedule.	Jobs for maintenance to be done that day or the next day are on here and will directly effect operations.	

Normal operating procedure for operator expectations.

18.	Review the E-Mail daily.	All of your information comes from here. Whether it's Memos, updates on current events, safety issues, changes on processes, or upcoming meetings that you will need to attend.	
19.	Write or request that work orders are to be written on equipment.	Verify that all equipment is working right and if not be sure there is a work order generated to repair it.	
20.	Be committed to work order follow up by: 1. Maintenance doesn't go to work on anything until you turn it over to them. 2. Ask to see the work order first to verify the proper piece of equipment. 3. Give maintenance your expectations of the job up front. You will need to verify that the work is complete before they are allowed to leave. Also they will need to clean their mess up before you will sign the work order off and say the job is complete.	When ever Maintenance comes to you with a work order.	
21.	Do routine walk through of your area.	There should always be a walk through of your area at the beginning of each shift followed by a periodic walk through as time permits.	

Normal operating procedure for operator expectations.

22.	Use barricades or danger, caution tapes with appropriate tags.	Where ever needed use the right equipment to alert operators of any hazards that may be present.	
23.	Use S.O.P.'s on all jobs.	Follow and use all sops's, isolation/ lockout procedures on any job that you are doing. Access to these will be on the home page. You will need to be certified on all of them as well as do them step-by-step the way they are written. (NO SHORT CUTS)	
24.	Report all accidents or incidents.	All accidents and incidents need to be reported to your supervisor no matter how small they may be.	
25.	Give a proper relief.	You will need to make sure you give a good relief, be sure you take the time to communicate all events and document in the log book all events before leaving to go home.	
26.	Take the designated lunch and coffee breaks.	You are paid for a lunch break when you are an hourly operator so you will only get lunch when time permits. However you do have two 15-minute coffee breaks and no longer.	

Normal operating procedure for operator expectations.

27.	Commit to being safe.	Safety of yourself and other fellow Operators come first. Think Safe/Be Safe.	
28.	Log hourly readings on the Data Entry screen.	Refer to the how to enter readings on the Data Entry Screen procedure.	
29.	Trouble shoot and help resolve any problems.	Work with field operators, maintenance, electricians, contractors, or Engineering.	
30.	Activating the 333 system.	Assist other operators on emergencies.	
31.	Review the Lab analysis report daily.	Keep up on the control analysis for your area processes.	
32.	All operators will comply with the Agrium Harassment Policy.	All Agrium Operators are expected to maintain Professionalism at all times.	
33.	All operators will comply with Environmental issues pertaining to your areas.	Spills must be reported to area supervision and immediately cleaned up and disposed of accordingly. Refer to Environmental Guidelines established in your area.	

Training Notes:

- 1. Safety is the number one priority always.**
2. Use of the standard operating procedures.
3. Use of personal protective equipment.
4. The need to follow company policies.
5. The importance of knowing your expectations.

Page 6 of 7

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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Evaporator Boilout

PHOS-Normal Op-01

02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to put an Evaporator on Boilout.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified. Must be B-Evap Operator certified.

Required Documents:

Tools and Equipment: Radio communication, hoses, Cam Lock Fittings.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns	<ul style="list-style-type: none">• Pond Water spills need to be kept in containment area.

Evaporator Boilout

TASKS:

1. Open and close valves.
2. Start/Stop pumps.
3. Handling of 3" Hoses.
4. Directing flows.
5. Monitoring temperatures.
6. Filling Evaporator with Pond Water.
7. Draining Evaporator off of Boilout.

NOTE

Evap has already been taken down. Once Tube Bundle has been blasted and doors installed, fill the Evaporator for Boilout.

	Steps	Key Points	PPE/Hazards
1.	Remove locks from Feed Pump and energize breaker.	Can be done by the A-, B-Evap Operator, or the C-Utility Operator.	
2.	Notify B-Evap Operator to start the Evaporator Feed Pump.	B-Evap Operator will also verify Suction and Discharge Valves are open and that Wash Valve is closed. Feed Pump starts in the field only.	
3.	Notify B-Evap Operator to start filling the Evaporator with Pond Water.		
4.	Notify DCS Operator to set Feed Automatic to Manual at 100% open.		

NOTE

Leave the Half-Way Valve open, Suction and Discharge Valve(s) to Product Pump closed, and Wash Valve open.

Periodically verify that Evaporator is full by opening Suction Valve to Product Pump
Verify Pond Water is coming out of Wash Valve before starting Evap Circulation Pump.

5.	Close Suction and Discharge valves on Product Pump.	There are 2 Discharge Valves.	
6.	Start Evaporator Circulation Pump.	Have DCS Operator start the pump.	

Evaporator Boilout

7.	Start Evaporator Condensate Pump.	DCS will verify Condensate Discharge Valve is open to the Seal Tank. DCS Operator has a stop ONLY on this pump.	
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NOTE

35[#] Steam Automatic Valve could leak by.

8.	Verify that Evaporator 35 [#] Steam Auto is closed.	DCS Operator will verify.	
9.	Open Main 35 [#] Steam Manual Block Valve ¼ of the way.		

NOTE

DCS Operator will contact North Plant, East Sulfuric Plant, and PPA Plant (if using their steam at the time) before doing a steam start-up on the Evaporator.

10.	Begin steam start-up sequence to the Evaporator.	Communicate with DCS. DCS will initiate.	
11.	Close Half-Way Valve to Product Pump.	When ready to boil through the vent line. This will wash the scale off of the half way valve to reduce chances of damaging the diaphragm.	

NOTE

150° on the Evaporator is considered at Boilout temperature. Never let the Evaporator temperature exceed 195°. This will take rubber out of the Evaporator Vapor Head. Take necessary steps to meet control limits.

Log down time when Evaporator is at Boilout.

12.	Close Wash Valve on the Product Pump.	After Evap has boiled for ten hours over the top.	
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Evaporator Boilout

NOTE

If Evap Product Hose needs to be moved at the Distribution Box, Product Pump needs to be locked out and DCS verified it will not start, before moving hose.

13.	Open Suction Valve to Product Pump.	Verify with B-Evap Operator that Product Hose is tied back to its own box.	
14.	Open Product Pump Discharge Valve ¼ of the way.	Evap is now boiling through vent line.	
15.	Start Evap Product Pump.	DCS will start.	Keep Pond Water contained.
16.	Open Halfway Valve.	Evap will now be boiling back to itself.	

NOTE

Wash Product Pump and piping to Distribution Box for one hour.

17.	Verify 42% Splitter Product Line is aligned to the Ditch.	Located on top of 42% Clarifier.	
18.	Open Product Pump Discharge Valve all of the way to 42% Splitter, and close the other Discharge Valve to the Distribution Box.	Boil to Splitter. Drain line for last hour of Boilout cycle.	Keep Pond Water contained.
19.	Dump the condensate to the seal tank.	DCS Operator will close.	
20.	Close Steam Automatic.	DCS Operator will close.	
21.	Close Manual Steam Block Valve.	Open Bleed Valve.	
22.	Start up Steam Jets by: 22.1 Open 125# Steam Valve(s) 22.2 Open ¾" Pond Water Valve to Intercondenser. 22.3 Close Vacuum Breaker. 22.4 Open Main Condenser Valve.	To pull vacuum and cool down Evap before draining. DCS Operator will open.	Contact with hot piping. Thermal Burns.

Evaporator Boilout

NOTE

Evaporator needs to cool down to 100° or below before draining off of Boil.

23.	Isolate the Pond Water to the Evap Feed Box.	Done by B-Evap Operator.	
24.	Isolate Steam Jets.		Contact with hot piping. Thermal Burns.
25.	Shut off all pumps.	Done by DCS Operator.	
26.	Hook up hose and drain Evaporator empty.	Be sure to put up barricades.	Pond Water needs to be contained.

NOTE

In cold weather, blow out piping to prevent freeze-ups.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid

Draining and Flushing of the Nitric Tank

Phos-Turnaround-01
5/16/2005

Objective: To provide operating personnel with step by step instruction on how to drain and flush the Nitric tank for cleaning, inspection, and repairs during turnaround.

Requirements: Operator must be trained in the use of SCBA. Until the tank is drained, neutralized, and rinsed, SCBA and a saranex suit will be worn.

Required Documents: An MSDS for Nitric and Soda Ash are in the MSDS book.

Tools and Equipment: 2" hose that is made for acid use with cam lock fittings. Nox monitor. PH Paper.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• SCBA• Hard Hat• Saranex Suit• Rubber Gloves• Rubber boots• Face Shield	<ul style="list-style-type: none">• Nox fumes• Contact with Nitric Acid• Fatigue from working under full SCBA• Oxygen deficiency or possible lack of oxygen.	<p>All neutralized acid and flush water from the tank must be kept in containment.</p> <p>Nox alarms must be verified they are working properly.</p>

Page 1 of 6

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Draining and Flushing of the Nitric Tank

TASKS:

1. Opening and closing valves.
2. Hooking up hoses with cam lock fittings.
3. Starting and stopping pumps.
4. Mixing Soda Ash.

CAUTION

SCBA and a Nox monitor must be worn until job is complete. This is for your own protection until all hazards are identified.

Steps		Key Points	PPE/Hazards
1.	Lock and Tag truck line to Nitric tank.		
2.	Open the bleed valve on the truck line.	This is to drain out any residual acid in the line.	
3.	Verify the Nitric Feed pump is off.	Communicate with DCS.	
4.	Lock, Tag, and Try the Nitric Feed pump.		
5.	Close the first suction valve off of the Nitric Tank to the feed pump.		
6.	Open the bleed valve between the two suction valves on the Nitric Pump.	This will bleed the Nitric out of the pump and lines as well.	
7.	Open the second suction valve on the pump that was out of service.		
8.	Open both discharge valves on the pump that was out of service.		
9.	Open the bleed valve between the two suction valves of the Nitric pump that was out of service.	This will bleed the Nitric out of the pump and lines as well.	
10.	Open the bleed on the bottom of the spill back line to the Nitric tank.		
11.	Close the discharge valves on both Nitric pumps after the Nitric has drained out.		
12.	Close secondary suction valves on both Nitric Feed pumps.		
13.	Lock and Tag suction and discharge valves on both pumps.		

Draining and Flushing of the Nitric Tank

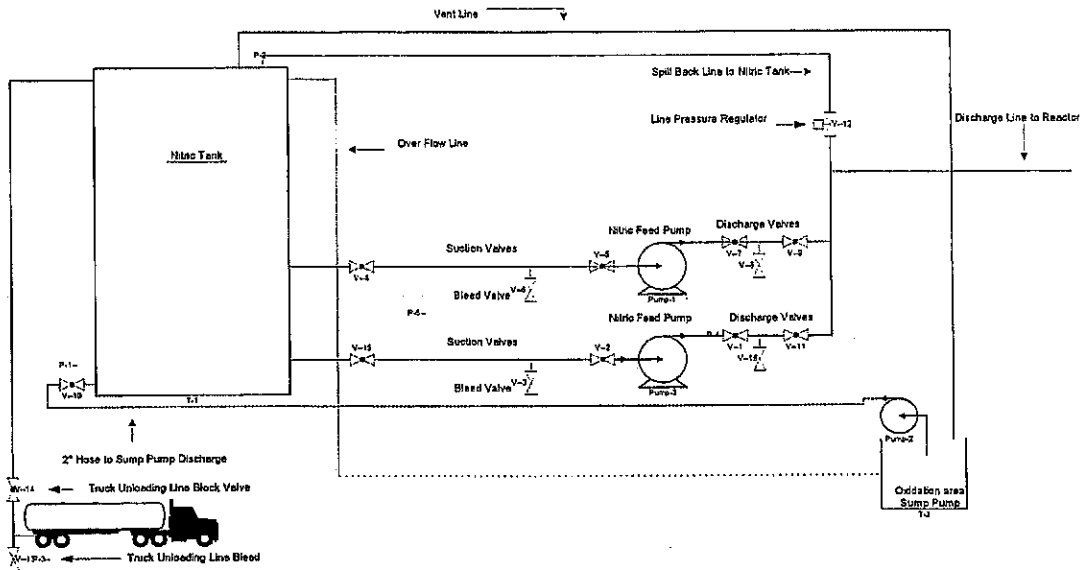
14.	Connect the 2" hose to the drain line on the bottom of the Nitric tank.		
15.	Connect the other end of the 2" hose to the sump pump discharge line.		
16.	Verify the bucket is on the bottom of the vent line and filled with water.	This is to keep the fume abatement system active.	
17.	Close the sump pump valve to the ditch.		
18.	Open the sump pump valve to the 2" hose		
19.	Open the Nitric tank drain valve.		
20.	Start mixing water and Soda Ash in the sump and pumping it into the Nitric tank.		
21.	Start the Oxidation area sump pump to the tank.		

NOTE

Continue mixing the Soda Ash solution until the Nitric tank starts overflowing, then check the PH on the solution. Continue mixing Soda Ash into solution a PH of 2 is reached.

22.	Shut the sump pump down once a 2 PH is reached.		
23.	Open the sump pump discharge valve to the ditch.		
24.	Close the sump pump discharge valve to the 2" hose.		
25.	Close the tank drain valve.		
26.	Disconnect the 2" hose from the sump line and put it into the ditch.		
27.	Open the tank drain valve.		
28.	Start the sump pump with a water flush to the ditch until the tank is empty.		

Draining and Flushing of the Nitric Tank



Draining and Flushing of the Nitric Tank Diagram			
01	Valve, Pump, Line, and Tank Locations	5/16/2005	APPROVED

Draining and Flushing of the Nitric Tank

Standard Operating Control Limits			
SOCL #:			
Deviation	Condition	Consequence	Action To Take
High/High			
High	PH above 7. Nox above 3 ppm.	Excess corrosion. Hazardous breathing environment.	Add water. SCBA
Low	PH below 2.	Excess corrosion.	Add Soda Ash.
Low/Low			
Temperature			
Pressure			

Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS

SPA Evap Boil

PHOS-Normal Op-01

02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to put an SPA Unit on Boil.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified.

Required Documents:

Tools and Equipment: Radio communication, 3" Cam Lock Hoses, Cam Lock Fittings, and Personal Nox Monitor.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear• Face Shield• Saranex Suit• Rubber Gloves• Rubber Boots	<ul style="list-style-type: none">• Hot Condensate	

SPA Evap Boil

TASKS:

1. Hooking up 3" Cam Lock Hoses.
2. Starting and stopping pumps.
3. Opening and closing valves.
4. Filling and draining SPA Evap.
5. Putting up and putting away barricades.

NOTE

SPA Unit has already been drained of acid and rinsed with Pond Water. All bleeds and drain valves are still open.

Steps		Key Points	PPE/Hazards
1.	Set up barricades around SPA Unit.	To keep personnel clear of area.	
2.	Close all Drain and Bleed Valves on Super Unit.		
3.	Open both belly bypass valves.	To keep the boil out from backing up the vent line and scrubber system.	
4.	Hook up condensate Hose to the Belly, or the super unit feed pump.	Close Condensate Bleed Valve. When ever possible boil through the feed pumps.	Full Rubber Gear or Saranex Suit must be worn. Face Shield Rubber Gloves Rubber Boots Contact with hot Condensate.
5.	When Oxidation Feed Tank has sufficient level, start the Oxidation feed Pump.	DCS will monitor tank level and start pump. Valves are already lined up to the Bypass Loop since rinsing Evap as per SPA Shutdown.	

SPA Evap Boil

NOTE

If you are not boiling the cooler feed pump, you will need to boil the oxidation feed pump over the side of the oxidation reactor, and boil the product cooler tank and the product cooler circulation pump by opening the product cooler tank supply valve.

6.	Start Cooler Feed Pump.	DCS will start. Every other time due to the integrity of the piping.	
7.	When Product Tank has sufficient level, start Cooler Circulation Pump.	DCS will monitor tank level and start pump.	
8.	Start Circulation Pump.	DCS will start.	

NOTE

Evap will be on Boil when temperature of Evap is 150°.
Communicate with DCS and verify that there is no Nox on top of Oxidation Reactor.
Carry a Nox Monitor.

9.	Align Washout Piping on top of Oxidation Reactor so flow travels to the Ditch.	To be done the last half hour of Boil. Open 2" Plug Valve on piping to Ditch.	Contact with hot piping.
10.	Close Condensate Valve.	After SPA Unit has boiled 2 hours.	Full Rubber Gear or Saranex Suit must be worn. Face Shield Rubber Gloves Rubber Boots Contact with hot Condensate.
11.	Close Belly Valve.	Open Condensate Bleed Valve to Drain Hose.	Full Rubber Gear or Saranex Suit must be worn. Face Shield Rubber Gloves Rubber Boots Contact with hot Condensate.

SPA Evap Boil

CAUTION

Verify Condensate Hose has bled off before removing.

12.	Unhook Condensate Hose.	Roll up hose on Hose Rack.	Full Rubber Gear or Saranex Suit must be worn. Face Shield Rubber Gloves Rubber Boots Contact with hot Condensate.
13.	Hose up pond water to the belly valve.	Start the vacuum system for cool down.	
14.	Open belly valve.		
15.	Start the pond water	To cool down the super unit to 100 degrees.	
16.	Shut off all pumps.	DCS will shut off all pumps.	
17.	Open Belly Valve and drain to Ditch.	Open all bleeds and drain valves.	Full Rubber Gear or Saranex Suit must be worn. Face Shield Rubber Gloves Rubber Boots Contact with hot Condensate.



Conda Phosphate Operations

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS
WATER BLASTING AN EVAPORATOR TUBE BUNDLE.

PHOS-Startup-02
04/06/04

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to water blast an Evaporator tube bundle

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. A-Evap certified, B-Evap certified, C- utility certified.

Required Documents: refer to water blasting using the foot pedal and snake, lockout/ isolation of an Evap feed pump.

Tools and Equipment: Radio communication, water blaster, water blaster foot pedal and snake, channel locks, Teflon tape, barricades, barricade tape and appropriate tags, whip checks, drop lights.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Rubber Gloves• Hearing Protection• Safety Toe Footwear• Rubber boots• Face shield• Tyvek suit• Turtle skin blasting armor.	<ul style="list-style-type: none">• High pressure system• Possible loss of balance• Injury from high pressure water• Flying debris	

Water blasting an Evaporator tube bundle.

TASKS:

1. Connecting water-blasting hose.
2. Connecting the water blaster foot pedal.
3. Use of the whip checks on all hose joints.
4. May need to change snake or snake blasting tip.(PSI rated fittings).
5. Adjusting blaster PSI for the job task.
6. Need to change out water blaster hose to foot pedal connection (Need to be PSI rated fittings)

NOTE

The A Evap operator will isolate and lockout the feed pump or valves. The C- utility operator will verify and lock out also, before blasting.

NOTE

The Evaporator unit has been drained and rinsed out and equipment shut off. The SPA unit tube bundle lid door will be opened by Maintenance. The operators will open the rest of the Evaporator doors.

Steps		Key Points	PPE/Hazards
1.	Fill out the Water Blaster check list.		
2.	Verify that the feed valve is closed, and the flush valve is open,		
3.	Lockout the feed pumps breakers.	Start/Stop check the pump.	
4.	Open the tube bundle door.	Use proper tools to open door.	
5.	Set up the water blaster and required hose.		

CAUTION

When using a foot pedal snake, be aware that the snake could rupture or the blasting tip could break off, come undone off the end of the snake, which could cause the hose to come back in your direction. Be aware that the tip is designed to pull forward by the means of the jet holes on the tip, spraying back toward you. Never pull the hose out of the tube while the foot pedal is engaged, or serious injury could result.

6.	Start the water blaster pump	Refer to water blasting procedure.	
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Water blasting an Evaporator tube bundle.

NOTE

Set the water blaster pressure no higher than 3500 pounds when blasting Evap tube bundles, unless told other wise. If the pressure is ever set over 4000 psi, a safety watchman is required.

Never adjust the pressure while the water blaster is idling, needs to be under pressure.

The DCS operator can shut down the Water Blaster. This will eliminate the need for an operator to be on stand-by by the Water Blaster.

Steps		Key Points	PPE/Hazards
7.	Set the water blaster pressure.	Open the manual valve off of the foot pedal to the snake hose and step down on the trigger. Use radio control to have operation set pressure where needed.	Face shield, turtle skin blasting armor, tyvek suit.
8.	Begin blasting by; 1. Inserting into tube about one inch. 2. Open the valve handle to the snake. 3. Depress the foot pedal and lower hose into the tube slowly.	Twist hose as it is lowered into the tube to blast out all debris.	Face shield, turtle skin blasting armor, tyvek suit.

CAUTION

When lowering water blaster hose under pressure down the tube, do not let the tip of the hose come out of the tube at the bottom of the tube bundle under pressure, this will cause extensive rubber damage to the bottom-reducing cone.

9.	Continue lowering the water blaster hose into the tube until hose is just about to blow through the bottom.	Blasting sound will be louder.	Face shield, turtle skin blasting armor, tyvek suit.
10.	Slowly pull the hose back up through the tube under pressure.	Twist the hose to blast out the debris.	Face shield, turtle skin blasting armor, tyvek suit.
11.	Continue to blast all the plugged tubes in the tube bundle.	Repeat steps #6, #7, and #8, if needed.	Face shield, turtle skin blasting armor, tyvek suit.

Water blasting an Evaporator tube bundle.

NOTE

When water blasting the super unit tube bundle, it is not necessary to pull the bottom inspection door each time, Depending on the amount of plugged tubes, 10 plugged tubes is borderline as to weather or not you will need to pull the snail blank.

Steps		Key Points	PPE/Hazards
12.	Shut off the water blaster.	Radio communication. Stop water blaster and disconnect the water blaster hose.	
13.	Open the bottom door.	When the water blasting is completed.	
14.	Scrape out all debris out of the belly.	Use the long handled belly scraper.	
15.	Inspect the bottom of the tube bundle for build up.	Clean as needed.	
16.	Close the bottom belly door and install bolts.	When the belly section is cleaned.	
17.	Close the top tube bundle door and install the bolts.	Maintenance will install the super unit lid and use new gasket material.	
18.	Remove pad locks.		
19.	Store away the water blaster equipment and all tools used.		
20.	Clean up the water blaster debris by the bottom belly door.	Put the debris in the dump truck and haul it to the stack.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos

Boiling A Lamella

PHOS-Normal Op-01

02/17/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how boil a Lamella.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be A-Evap certified. Must be B-Evap Operator certified.

Required Documents: Boiling an Evaporator, and Condensate washing a pump.

Tools and Equipment: Radio communication, 3"Reinforced Hose and Fittings, Condensate Hose and Fittings, Danger Tape with appropriate tags, and barricades for Condensate in use.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear• Face Shield• Saranex Suit• Rubber Gloves• Rubber Boots	<ul style="list-style-type: none">• Thermal Burns• Acid Burns	<ul style="list-style-type: none">• All spills must be kept in containment area.

Boiling a Lamella

TASKS:

1. Opening and closing valves.
2. Handling hoses.
3. Starting and stopping pumps.
4. Starting Condensate and stopping Condensate.
5. Setting up barricades.
6. Setting up Danger Tape and tags.

NOTE

After the Lamella has been washed, all tools and equipment are put away and the Lamella has been set up for service.

Steps		Key Points	PPE/Hazards
1.	Hose up Condensate or an Evaporator Product Pump Hot Boil Out Water to the Lamella Feed Line Wash Valve.	If hosing up to run Condensate or Hot Boil Out Water to #1 or #2 Lamella Feed Line, it will be necessary to hose up to the South Tank 18 Wash Valve for #1 lamella. For #2 Lamella, use the North Tank 18 Pump Wash Valve. When setting up to boil the #3 Lamella, hose up to the #3 Lamella Feedbox at the DB Box.	All spills must be contained. Hard hat Safety Glasses Safety Toe Footwear Rubber Gloves Rubber Boots Face Shield
2.	Set up barricades or Danger Tape and tag off the area around the desired Lamella.	Verify that the Condensate area or Hot Boil Out Water used in it is secured before starting any flows to the Lamella.	
3.	Set bottom Drain Valve about ¼ of the way open.	Set the Underflow Hose to a Sump or a Ditch. If using an Underflow Sump Pump, be sure to se the Underflow Hose to the Ditch.	

Boiling a Lamella

NOTE

Before starting Condensate, be sure to notify the B-Evap Operator at the Distribution Box. The B-Evap Operator will need to put up his chain "Condensate in Use" barricades around the box So as the boil out water/ condensate from the lamella over flow piping is barricaded.

CAUTION

Before starting the Condensate or Hot Boil Out Water, put on appropriate PPE: Rubber Gloves, Rubber Boots, Face Shield, and Saranex Suit.

4.	Start the Condensate or Hot Boil Out Water to the Feed Box or to the designated Tank 18 Feed Pump Wash Valve.	Notify the B-Evap Operator when a good flow to the Lamella Feed Box has been established.	All spills must be contained. Hardhat Safety Glasses Safety Toe Footwear Rubber Gloves Rubber Boots Face Shield
5.	Fill the Lamella until it starts to run over the Overflow.	When an Overflow has been established, regulated the Underflow Valve to maximize the boil over the top and out the Underflow.	
6.	Start the Underflow Pump, or open under flow valve.	Have the B-Evap Operator verify that you have an Underflow.	Hardhat Safety Glasses Safety toe Footwear Rubber Gloves Rubber Boots Face Shield

NOTE

Have the B-Evap Operator verify that there is a good flow from the Product Line to the DB Box going back to the Lamella Feed Box.

Boiling a Lamella

7.	Start the Overflow Pump to the DB Box or verify over flow hoses are to the appropriate box.	B-Evap Operator needs to verify that the line does not blow out of the Feed Box.	All spills must be contained. Hardhat Safety Glasses Safety Toe Footwear Rubber Gloves Rubber Boots Face Shield
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NOTE

Verify that the barricades are still in place before draining lamella. Handle this the same as Evaporator boil outs. Refer to Evaporator boil out procedure.

NOTE

Once Boil Out is completed, shut off all flows to the Feed Pump, shut off the Feed Valve, and drain the Lamella empty to get ready to fill for service. Shut off the Underflow Pumps.
In case of cold weather, chase the system out with 42% acid and blow out the lines.

8.	Take down all barricades or Danger Tape and tags.	Throw away all garbage, roll up all associated hoses, and clean up the area.	
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Training Notes:

1. Need to be sure to use barricades and Danger Tape with tags.
2. Wear appropriate PPE when working with Condensate.
3. Use good radio communication with any job.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid

Sulfamic Wash the SPA Coolers

Phos-Normal-01

6/1/04

Revised by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to Sulfamic wash an SPA cooler.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be A-Evap Operator certified.

Required Documents: Lock out procedure for SPA Coolers. MSDS for Sulfamic acid, and Rodine Inhibitor #102.

Tools and Equipment: 55 gallon drum, 3" hose, sandpiper pump, PH tester.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">➤ Tyvek suit➤ Dust mask➤ Face shield➤ Rubber gloves	<ul style="list-style-type: none">➤ Contact with mild acid solution➤ Dust inhalation of Sulfamic acid and Rodine Inhibitor	

Sulfamic Wash SPA Coolers

TASKS:

1. Isolation and Lockout
2. Hooking and unhooking 3" hoses
3. Testing PH

Steps		Key Points	PPE/Hazards
1.	Isolate and lockout the proper SPA cooler.	Refer to isolation and lockout procedure for SPA coolers	
2.	Isolate and lockout the raw water supply to the cooler.		
3.	Disconnect the cooler water discharge line to tank #10.		
4.	Install reducer and three inch camlock fitting.	Pinch points	
5.	Install hose on camlock fitting.	Pinch points	
6.	Put the other end of the cooler water discharge hose into a 55-gallon drum.		
7.	Install the suction hose of a sandpiper pump into the 55-gallon drum.		
8.	Hook the discharge hose of the sandpiper pump to the water inlet of the cooler and open the inlet valve.		
9.	Barricade the area with safety tape and tags to protect people from walking into the area.		
10.	Fill the 55-gallon drum nearly full of water and add one bag of sulfamic acid and 10 cups of Inhibitor #102.		
11.	Stir solution until dissolved.		
12.	Slowly pump the solution into the cooler.	Repeat steps 9-11 until the drum maintains level.	
13.	Monitor solution and add Sulfamic acid and Inhibitor #102 to maintain the PH between 1-2.	Try to maintain the temperature of the solution above 140° F.	
14.	After wash is complete, drain the solution to the floor sump or wastewater launder.		

Sulfamic Wash SPA Coolers

15.	Thoroughly rinse all equipment with clear water to the floor sump or wastewater launder.		
16.	Disconnect hoses.		
17.	Put the cooler system back in service.		
18.	Store hoses, drum, fittings, sandpiper pump and tools.		

Standard Operating Control Limits			
SOCL #:			
Deviation	Condition	Consequence	Action To Take
High/High	What is the condition?	What will occur in this status?	What action do we need to pursue to overcome results?
High	Solution temp.> 140°F	Vapor Flash off	Reduce heat source
Low	Solution temp.< 140° F	Low wash efficiency	Increase heat source
Low/Low			
Temperature			
Pressure			

Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS
A-Evaporator Operator
Normal Duties of the Evaporators and the Super Units.

PHOS-Normal OP-01
03/18/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform normal duties of the Evaporators and the Super Units.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. A-Evaporator certified.

Required Documents:

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety toe foot wear• Rubber Gloves• Rubber Boots• Leather gloves		

A-Evaporator Operator Normal Duties of the Evaporators and the Super Units.

TASKS:

1. Clear and concise radio communications.

NOTE

This procedure also applies to the normal operations of the Super Units.

Steps		Key Points	PPE/Hazards
1.	Monitor and control the feed rates on the Evaporators and Super units.	Coordinate with DCS operator.	
2.	Monitor and control the temperatures on the Evaporators and Super units.	Coordinate with DCS operator.	
3.	Monitor and control the Product Cooler Recirculation acid temperature on SPA Units.	Coordinate with DCS operator.	
4.	Monitor and control the product Cooler Recirculation acid flow on SPA Units	Coordinate with DCS operator.	
5.	Monitor and maintain the Evaporators and Super units vacuum.	This is to optimize the evaporation.	
6.	Start up or shutdown an Evaporator or Super unit.	Coordinate with DCS and the B-Evaporator operator.	
7.	Monitor and control the steam flow to the Evaporator.	Coordinate with DCS and the B-Evaporator operator.	
8.	Monitor and control the Therminol temperature of the Super Unit.	Coordinate with DCS and the B-Evaporator operator	
9.	Coordinate with the DCS operator to regulate condenser water flows.	To optimize vacuum and performance.	
10.	Check and monitor the (PH) on the condensate.	Communicate with the North and East Sulfuric Plant operators to optimize condensate to them.	
11.	Check Therminol heaters for proper operation.	On Super Units.	
12.	Clean Evaporator and Super Unit steam jets.		
13.	Pressure check Evaporator and Super Unit tube bundle.		

A-Evaporator Operator Normal Duties of the Evaporators and the Super Units.

14.	Inspect and water blast an Evaporator and Super Unit tube bundle.		
15.	Inspect Evaporator and the Super Unit vapor heads.	As needed.	
16.	Wash an Evaporator and a Super Unit Feed Pump.		
17.	Wash an Evaporator Product pump.	To take care of entrainment problems.	
18.	Put an Evaporator or a Super Unit on Boil.		
19.	Take an Evaporator or a Super Unit off Boil.		
20.	Add Therminol to Super Unit.		
21.	Drain therminol from Super Unit.		
22.	Check all pumps and motors in the Evaporator area.	Checking for vibrations and noise.	

Training Notes:

1. Tasks that need to be done daily when an A-Evaporator is on shift.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Normal Operating procedure for the DCS operator
(Expectations)

PHOS-Normal OP-01

03/13/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to perform the normal operating duties or the expectations of a DCS operator on a daily basis.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Certified DCS Operator.

Required Documents:

Tools and Equipment: Radio communication, Telephone and computers.

PPE	Hazards	Environmental Considerations

TASKS:

1. Monitor and control all the Phos equipment.
2. Monitor and control all the Phos communications.
3. Monitor all the Phos emergencies.
4. Monitor and control all the Phos check in's or check out's for the whole phos department as far as contractors or visitors ETC.
5. Monitor and keep the DCS building clean.

Page 1 of 5

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Normal Operating Procedure for the DCS Operator (Expectations)

NOTE

Expectations are a very important part of everyone's jobs.

Steps		Key Points	PPE/Hazards
1.	Monitor the DCS and all equipment.	This will include the Ball Mill Rock Slurry storage tank, Sulfuric acid pumps, or anything that pertains to the Phos Acid area.	
2.	Log hourly readings on the Data Entry screen.	Refer to the how to enter readings on the Data Entry Screen procedure.	
3.	Log problems, lab test results and daily occurrences.	These items will be recorded in the appropriate logbooks provided at DCS.	
4.	Log people entering and leaving Grade Control area.	This will be recorded in the appropriate logbook provided at DCS to keep track of where people are for the Nox and ammonia issues in this area.	
5.	Follow all plant policies.	Shaving policy, Smoking in designated areas, ETC.	
6.	Verify all alarms on the DCS before silencing anything.	DCS's main responsibility is to stay on top of all alarms, no matter how obnoxious and repetitive they may be.	

Normal Operating Procedure for the DCS Operator (Expectations)

7.	Review what's been suppressed or bypassed on the DCS.	This should be done at the first of your shift. In case your relief forgets to tell you. You should not get in the habit of suppressing anything unless your supervisor okays it first. This is very important.	
8.	Trouble shoot and help resolve any problems.	Work with field operators, maintenance, electricians, contractors, or Engineering.	
9.	Communicate accurate and current status of equipment or events.	Work with field operators, maintenance, electricians, contractors, or Engineering.	
10.	Write work orders.	This will be done as need by request of operator or the supervisor.	
11.	Give safety support or suggestions to the field operators.		
12.	Communicate with the supervisor.	Use of a radio or phone on any issues that arise.	
13.	Start/stop equipment as needed or requested.	For lock outs.	
14.	Check history data on equipment on the DCS.	Done when trouble shooting equipment, or DEQ events, etc.	
15.	Read and follow the daily instructions or (poop sheet).	Pull up the poop sheet daily and follow the parameters dictated.	

Normal Operating Procedure for the DCS Operator (Expectations)

16.	Review the daily maintenance schedule.	Keep up on the equipment that needs to be ready for maintenance each day.	
17.	Review the Lab analysis report daily.	Keep up on the control analysis for the Phos process.	
18.	Report all accidents or incidents.		
19.	Activating the 333 system.	Assist other operators on emergencies.	

Training Notes:

1. Get a clear description of job expectations.
2. Importance of everyone's involvement in order to become successful.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

**DRAINING THERMINOL FROM THE SUPER UNIT
BURNER SYSTEM**

PHOS-normal -01

03/06/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the draining of the therminol from the super units burner system.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Certified A evaporator operator.

Required Documents: MSDS on therminol. Emergency shutdown of a super unit procedure.

Tools and Equipment: Valve wrench, 3/4" hose and fittings and hose safety clips.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear• Safety harness	<ul style="list-style-type: none">• Thermal burns (therminol temperature coming off the burner will be around 400 to 500 degrees F.) You always cool down first.	<ul style="list-style-type: none">• Therminol spills need to be contained and reported.

DRAINING THERMINOL FROM THE SUPER UNIT BURNER SYSTEM

TASKS:

1. Drain therminol from the super unit burner to the holding tank system.
2. Properly tie off of a ladder.
3. Certified scaffolding personnel to erect the scaffolding if needed.

NOTE

Be sure to tie the ladder off securely and use a safety harness with 100% tie off. The ladder is used to get access to the drain valves on the suction and discharge lines of the super unit burners. You may need to have a certified scaffolding person erect scaffolding to be the safest.

	Steps	Key Points	PPE/Hazards
1.	Set up suitable ladder and or scaffolding.		

DANGER

Never try to transfer therminol before cooling it down; we do not have equipment to handle these temperatures. Temperatures will be 400 to 500 degrees.

NOTE

This procedure is pertaining to the fact that the Super Unit is already drained of Acid or water and is cooled down.

2.	Set up to drain suction and discharge elbows.	The elbows are located on the therminol piping at the burner.	All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.
3.	Attach a #3/4 inch hose at the therminol elbow fittings.	Run the 3/4 " hose from the therminol elbow drain valve to the therminol bulk tank storage pump suction valve fittings. Be sure that you use the 3/4" hose safety clips.	

DRAINING THERMINOL FROM THE SUPER UNIT BURNER SYSTEM

4.	Open valves at both ends.	Drain valve off the therminol bulk tank storage pump. Be sure that you use the 3/4" hose safety clips.	All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.
5.	Start the bulk tank storage pump.	This will pump the residue into the bulk tank. Be sure that you use the 3/4" hose safety clips.	

NOTE

After draining residue, disconnect the elbows at both ends of the burner and install blow out fittings with accompanying hose to a tanker and compressor. Assure that discharge hoses are secured to avoid hose whipping when air pressure is applied.

6.	Start the compressor.	Slowly open the air valve and blow out the therminol lines and hoses. Until the therminol is displaced. Be sure that you use the 3/4" hose safety clips.	All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.
7.	Shut off the air compressor.	Vent the discharge piping before disconnecting any of the air hoses or lines.	
8.	Disconnect inlet flange and insert "pig" in the line.		All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.

DRAINING THERMINOL FROM THE SUPER UNIT BURNER SYSTEM

9.	Reassemble inlet piping.		
10.	Re-pressurized the system with air.	This will blow the "pig" through the burner coil. A cross or "tee" at the discharge end of the burner should stop this.	
11.	Repeat steps #7 thru #10.	Repeat steps for the other therminol lines if needed.	
12.	Shut off the compressor, vent and disconnect piping and hoses.		
13.	Install blanks on both ends of the therminol burner coil.		All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.
14.	Clean up as needed.		

Training Notes:

1. How to drain therminol from the super unit burner system.
2. Importance of reviewing the MSDS's on any chemical before handling.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS
WASHOUT OF A TANK OR A CLARIFIER.

PHOS-Startup-01
03/05/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform A washout of a tank.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator.

Required Documents: confined space entry permit.

Tools and Equipment: Radio communication, air monitor with enough hose to reach the bottom of the tank. Barricades tape, 1 ½" and 2 ½" fire hoses and nozzles, trash pump, drop lights, air horns, 3" rein forced hose, ¾" hoses, SCBA.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Hearing Protection• Safety Toe Footwear• Rubber Gloves• Rubber boots• Saranex suit• Face shield• Respirator• SCBA	<ul style="list-style-type: none">• Phosphoric acid• Slip and trip hazards• H2S gas• CO gas• NO2 gas	<ul style="list-style-type: none">• Acid spills must be contained.

Washout of a tank or a clarifier.

TASKS:

1. Lock and unlock equipment.
2. Filling out required permits.
3. Washing out a tank with a fire hose.
4. Shoveling solids out of a tank.
5. Disassemble and assemble piping.
6. Set up a ladder.
7. Start/stop check with DCS on all equipment.
8. Use a safety watch person.

NOTE

Before entry into the tank, equipment must be locked out, tagged out, and tried. Confined space entry permit must be filled out and tank must be sniffed with an air monitor for gasses and oxygen content. The tank must also be tested for HF and NO₂.

This procedure can be used on a clarifier wash out, too also.

Steps		Key Points	PPE/Hazards
1.	Lock out all affected equipment to and from tank	May require a lockbox.	
2.	Fill out a confined space permit.	All hands working inside of a tank must sign the confined space entry permit, with a designated safety watch person.	
3.	Monitor tank for toxic gasses and/or insufficient oxygen.	Use a good air monitor with fresh batteries.	H ₂ S gas, CO gas, HF gas, NO ₂ gas.
4.	Gather all equipment needed for wash out.	Involve all hands.	

NOTE

May need to install an air horn on top of the tank blowing out to remove noxious fumes.

CAUTION

When draining a tank or Clarifier, make sure the volume draining out of the tank or Clarifier does not exceed what the Floor Sump will pump away.

5.	Remove top man way door, or lid.	If applicable to see if tank has drained.	
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Washout of a tank or a clarifier.

NOTE

In a clarifier wash, remove bottom piping after clarifier has drained.

6.	Remove bottom man way door and/or piping.	When drained.	
7.	Put up appropriate barricades and tape around the perimeter of the tank.		

NOTE

Tank entry may be gained through the bottom man way door. If not, use a suitable ladder and be sure it is tied off. You will need a safety watch person out side of the tank.

DANGER

If cleaning the Oxidation Reactor, monitor the atmosphere in the tank before entering. If the No_x level is 3 ppm or more, SCBA (Self Contained Breathing Apparatus) must be worn. If the reading is 20 ppm do not enter at all. 20 ppm is the IDLH (Immediately Dangerous to Life and Health) for No_x. SCBA must be worn for levels of HF above 3 ppm and at 30 ppm is IDLH. At this level do not enter any tank or vessel.

8.	Enter tank and begin washing.		
9.	Inspect the inside of the tank for any damage.	After tank or clarifier is washed out.	
10.	Clean out all associated piping, launders, and splitter boxes.	If applicable.	
11.	Install man way doors.		
12.	Install piping.		
13.	Clean up all debris around tank and dispose of properly.		
14.	Clean up all tools, and equipment used and properly store away.	Wash off as needed.	
15.	Unlock all equipment and align valves for a normal operation mode.	Verify that all wash and drain valves have been closed before putting the tank in service.	

Washout of a tank or a clarifier.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Condensate Washing Pumps in Evaporation Area

PHOS-Normal Op-01

02/17/03

Reviewed by: Frank Moore

Date: 8/11/2005

Objective: To provide operating personnel with step-by-step instruction on how to Condensate wash a pump.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be DCS Operator certified. Must be A-Evap Operator certified. Must be B-Evap Operator certified.

Required Documents:

Tools and Equipment: Radio communication, Condensate Hose, Pump, Condensate Barricades or Danger Tape and tags, and a means of bleeding-off PSI.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Hearing Protection• Safety Toe Footwear• Face Shield• Saranex Suit• Rubber Gloves• Rubber Boots	<ul style="list-style-type: none">• Thermal Burns• Ruptured line or hose• Exposure to 200° Waste Water	

Condensate Washing Pumps in Evaporation Area

TASKS:

1. Hooking up a Condensate Hose to Wash Valve of pump.
2. Ensuring that all barricades or Danger Tape and tags are in place.
3. Visually inspecting area. (For leaks and to make sure all employees are clear)
4. Opening Wash Valve.
5. Starting and stopping pump.
6. Opening Condensate to pump.
7. Closing Condensate Valve.
8. Depressuring System when done.
9. Disconnecting Condensate Hose.
10. Taking down barricades.

NOTE

Verify that the Condensate System is active and that it has not been shut off for any isolation reason; otherwise acid could be pushed back into Condensate Piping.

Steps		Key Points	PPE/Hazards
1.	Secure the area at the discharge end of the Pump Line, as needed.	Put up barricades, Safety Tape, and Signs, as needed.	
2.	Secure the area around the pump.	Put up barricades, Safety Tape, and Signs, as needed.	
3.	Hook the condensate Hose to the Wash Fitting and close Bleed Valve.		To avoid thermal burns, put on PPE: Rubber Gear or Saranex Suit, Face Shield, Rubber Gloves, and Rubber Boots.
4.	Close the Suction Valve to the pump.		Same as Step #3.
5.	Open the Wash Valve to the pump.		Same as Step #3.
6.	Slowly open the Condensate Valve all of the way.	With the pump running and the Discharge Valve open.	Same as Step #3.
7.	Open the Suction Valve to the pump.	As needed. This will send condensate through the suction of the pump.	Same as Step #3.

Condensate Washing Pumps in Evaporation Area

8.	Close the Condensate Valve.		Same as Step #3.
9.	Have the DCS Operator stop the pump.	Communicate with DCS Operator and fellow Operators.	Same as Step #3.
10.	Close the Discharge Automatic.		Same as Step #3.
11.	After a sufficient length of time, have Field Operator start the pump back up and have DCS Operator open up the Automatic.	Communicate with DCS Operator and fellow Operators. Verify that the pump is not back spinning.	Same as Step #3
12.	Close the Wash Valve to the pump, and open Bleed off Valve to depressurize line.		Same as Step #3.
13.	Disconnect the hose after cooling down.	If cold, Danger Tape/Tag area and bleed to ditch.	Same as Step #3.

NOTE

If weather is cold, bleed the Condensate System to the Ditch.

14.	Redirect the pump discharge, if needed.		
15.	Open the Suction Valve to the pump.		Same as Step #3.
16.	Confirm that the pump has adequate flow; if not, repeat the process.		Same as Step #3.
17.	Remove PPE.		
18.	Remove signs, barricades, and Safety Tape, and properly store out of the way of traffic.		



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS

Water Blast Using A Pressure Gun

PHOS-Normal Op-02

04/06/04

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to use Water Blaster using a Pressure Gun for any job in PHOS.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be a certified Operator on the use of the Water Blaster using the Pressure Gun.

Required Documents:

Tools and Equipment: Radio communication, Water Blaster, Water Blaster PSI-rated hose and fittings, Water Blaster PSI-rated Gun, Channel Locks, Pipe Wrenches, Teflon Tape, Whip Checks, barricades, Warning or Danger Tape, and proper tags.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear• Face Shield• Tyvek Suit• Rubber Gloves• Rubber Boots• Turtle Skin (Blasting Armor)	<ul style="list-style-type: none">• High Pressure System• Possible loss of balance• Injury from high pressure water• Flying debris	

Page 1 of 4

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Water Blast Using A Pressure Gun

TASKS:

1. Connecting Water Blaster Hoses.
2. Connecting Water Blaster Gun.
3. Possible need to change gun tip. (PSI-rated fittings)
4. Possible need to add Water Blaster Extension. (PSI-rated fittings)
5. Possible need to take off Water Blaster Extensions. (PSI-rated fittings)
6. Adjusting Blaster PSI to correct PSI for job task.
7. Possible need to change out Water Blaster Hose to Gun Connectors. (Need to be PSI-rated fittings)
8. Use of Whip Check on all hose joints.

NOTE

Depending on what is being blasted with the Blasting Gun will determine what Lockout, Isolation and Shutdown procedure to use.

Water blasting with the Pressure Gun on any job requires the help of a Safety Watchman if the pressure is over 4000 psi. Anytime the pressure is below 4000 psi the pressure gun can be a one-man operation after the pressure on the blaster has been set to the desired setting.

The DCS operator will start-up and shut down the Water Blaster. This will eliminate the need for an operator to be on stand-by by the Water Blaster.

Steps		Key Points	PPE/Hazards
1.	Fill out the Water Blaster check list.		
2.	Inspect the Water Blaster equipment.	Need to inspect hoses for fraying or wear. Inspect fittings, Water Blaster Tip, and the gun. Verify that the trigger is free and working.	
3.	Secure the area being worked in.	Use Warning Tape, Danger Tape, and proper tags or barricades.	
4.	Install Whip Check on all water blaster hose joints.		

NOTE

Once the area is secured and the appointed Safety Watchman has a radio, verify visually that everything is ready. Point the end of the Water Blaster Gun in a safe direction, leaving the trigger disengaged. Use radio communication as much as possible, some jobs radio communication will not be possible. Do to lack of radio equipment.

Water Blast Using A Pressure Gun

5.	Start the Water Blaster.	Use radio communications. Have the designated persons start the blaster.	
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NOTE

If the pressure is over 4000 psi, the safety Watchman must be a reasonable distance from the Start/Stop Station in case the Blaster needs to be shut down immediately.
Safety Watchman cannot leave the job sight until job is complete or when both the Blaster Man and Safety Watchman go to break.

6.	Set the Blaster pressure.	Squeeze trigger on gun while pointing in a safe direction. With trigger engaged, radio designated persons to set the desired pressure.	Turtle Skin (Blasting Armor) Required.
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CAUTION

When setting the pressure on the gun, be prepared for enough possible pressure that could cause loss of balance.

NOTE

When blasting is finished and Blaster is shut down, roll up the hoses and store Water Blaster Gun in designated location. This prevents tripping hazards, and keeps area clean.
Dispose of Hazard or Danger Tape and put away barricades.

7.	Shut off Water Blaster.	Radio communication. Designated persons will stop Water Blaster and disconnect Water Blaster Hose.	
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NOTE

Depending on temperatures, drain hoses before putting away, to prevent freeze-ups.
Valve-off main water supply valve to the Water Blaster.
Depending on time of year, keep a small amount of water bleeding to prevent freezing.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS

Washing a Lamella

PHOS-Normal Op-01

02/17/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal procedures for washing a Lamella.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be A-Evap Operator certified. Must be B-Evap Operator certified. Must be C-Utility Operator certified.

Required Documents: Confined Space Entry Permit will be needed to get inside of the lamella.

Tools and Equipment: Radio communication, Fire Hose and fittings, and may need Drop Lights if performing the job at night.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear• Tyvek Acid Suit• Face Shield• Rubber Gloves• Rubber Boots• Respirator• Acid Gas Cartridges	<ul style="list-style-type: none">• Contact with acid• Acid burns	<ul style="list-style-type: none">• All spills need to be kept in containment area.

Washing a Lamella

TASKS:

1. Using a fire hose and fittings.
2. Using wrenches or channellocks.
3. Confined Space Entry.
4. Use of Sniffer or air monitor.

NOTE

Verify that the Lamella is empty and that the Feed Pump has been isolated.

CAUTION

Lock, Tag and Try to verify that the equipment is safe to work on.

NOTE

Use Warning Tape and proper tags around the work area to prevent operators from walking through working area.

Steps		Key Points	PPE/Hazards
1.	Remove bottom Drain Valve or bottom Blank.	Use caution when removing in case there are still some solids hung up on the bottom.	
2.	Set up Fire Hose to the designated work sight.	When everything is set up to wash, charge the fire hose with water.	

NOTE

If the Lamella plugs up, stop washing and rod out the bottom until it breaks loose and drains out.

3.	Start washing the Lamella Trays and Feed Box.	Once starting to wash, verify that there is liquid coming out of the bottom and that the drain is not plugged.	
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Washing a Lamella

NOTE

Wash in between every tray completely to the bottom. If this is impossible, pull the bottom Inspection door off and clean off the bottom of the trays first. Lock out Feed Valve or verify that all hoses are out of the Feed Box at the DB Box. Verify with B-Evap. Operator that the Feed Valve is ready to be locked out or that the Feed Box to the Lamella is ready to be plugged.

4.	Pull off the bottom Inspection door.	Use proper tools and assistance to remove this door.	
5.	Clean off the bottom of the Lamella Trays.	Clean from outside of the Lamella with a bar or a scraping device.	

NOTE

Once the trays are clean and there is still chunks that can't get out, fill out an Entry Permit, Sniff, and use a Safety Watchman to get in and complete the task.

6.	Enter the bottom of the Lamella and clean out chunks.	Clean out all chunks that remain in the bottom of the Lamella.	
7.	Button up the Inspection Door.	Verify that everything has been removed from the Lamella before closing. Get help to install door.	
8.	Install the bottom Drain Valve and bottom Blank.	Once bottom valve and blank are installed, set the Underflow Hose and valve for service.	
9.	Wash Product Tank.	Washing of the Product Tank can be done from outside of the tank, but it may be necessary to get inside and shovel out.	

NOTE

When necessary to get inside of the Product Tank, fill out an Entry Permit and use a Safety Watchman.

Washing a Lamella

10.	Unlock the Feed Valve or unplug the Feed Box.	Once the Feed Valve has been unlocked or unplugged, notify the A & B-Evap Operators to verify that the Lamellas are ready for service.	
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NOTE

When job is completed, clean up the area and put away all equipment from the job. Roll up and put away all the hoses and fittings.

Training Notes:

1. Job is not complete until the clean up is done.
2. Be sure to use the right tool for the job task.
3. Lock, Tag, and Try every job.
4. Use of an Entry Permit for Confined Space Entry.
5. Use of a Sniffer or air monitor.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

PSI Checking an Evaporator

PHOS-Normal Op-01

02/17/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to pressure check the Tube Bundle of an Evaporator.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be A-Evap Operator certified. Safety Watchman could be anyone.

Required Documents: Confined Entry Space Permit required to install ball to the Tube Bundle, top and bottom.

Tools and Equipment: Radio communication, Air Monitor, and Sniffer.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear• Face Shield• Tyvek Suit• Rubber Gloves• Rubber Boots	<ul style="list-style-type: none">• Confined Space Entry• Acid burn	

PSI Checking an Evaporator

TASKS:

1. Drain Condensate from shell side of the Tube Bundle.
2. Drain Evap of acid and rinse.
3. Lock out Steam Block Valve and open Bleed Valve.
4. Lock out Feed Pump and Discharge Valve to Evap.
5. Lock out and Isolate Condensate manual valves.
6. Hook up Raw Water $\frac{3}{4}$ " Hose to bottom of shell side of Bundle Tube.
7. Turn Raw Water on and off to Bundle.
8. Visually check top and bottom of Bundle for leaking tubes.
9. Install Tube Balls or plugs.
10. Perform a final PSI test to verify that bundle is sealed.
11. Air Monitor/Sniffer.

NOTE

The following steps are performed after the Evap is drained off boil.

Steps		Key Points	PPE/Hazards
1.	Isolate the Feed Pump and then lock out.	Operators confirm the fail to start of the pump. Refer to lock out and isolation procedure. Can be done before or after boil.	Acid burns.
2.	Open the top Tube Bundle Door and open the Belly Door and lower Tube Bundle Door.	If necessary, blast all debris-plugged tubes.	
3.	Hook up the $\frac{3}{4}$ " Raw Water Hose to the condensate Drain Quick Coupler fitting.		
4.	Close off the Discharge Valves on the condensate Pump.		
5.	Open the top Ball Valve off of the Chest Pressure Gauge.		

PSI Checking an Evaporator

NOTE

Verify that Condensate Lines are isolated.
Verify that 35[#] Steam Block Valve is blocked out with Bleed valve open or closed in case the steam auto leaks by.
Acid Feed Pump and Discharge Valve should be locked out, and circulation locked out.

6.	Verify that the 35 [#] Steam Block Valve doesn't leak by so as not to shock the Bundle with cold water when filling to PSI check.		
7.	Fill the shell side with Raw Water and check the bottom of the Bundle for leaks.		Face Shield.

NOTE

Ensure that the bleed is shut on the Main Condensate Block Valve.

8.	If a broken tube is found leaking water, shut off the water and mark the tube.		Face shield.
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NOTE

A Confined Space Entry Permit must be filled out if the Operator gets inside of the Tube Bundle door. The circ. Pump must also be locked out.
Be sure to check the inside of the Tube Bundle top and bottom with an Air Monitor. Have a Safety Watchman on hand before entering.
Use the proper PPE (face shield, rubber boots, rubber gloves, and a Tyvek or Kappler Suit).

9.	Install the Ball Plug in the bottom of the broken tube first, and then install another Ball Plug on the top of the broken Tube Bundle.		Face Shield Tyvek or Kappler Suit Rubber Gloves Rubber Boots
10.	Refill the shell side with Raw Water and repeat Step #6 as necessary to plug all broken tubes.		Face Shield Tyvek or Kappler Suit Rubber Gloves Rubber Boots

PSI Checking an Evaporator

NOTE

If the tubes do no leak after filling the Tube Bundle completely, or if the Pop-off Relief Valve fails early, pressure up the Bundle to no more than 18 PSI.

11.	Close off the Ball Valve from the Chest Pressure Gauge.		Face Shield Tyvek or Kappler Suit Rubber Gloves Rubber Boots
12.	Disconnect the Raw Water Hose and drain the shell side of the Bundle completely.		
13.	Install the top and bottom Man-way Doors.	Clean Belly Section, if needed.	
14.	Unlock the Feed Pump, the Circulation Pump and all Condensate and Steam Valves. Energize the Breaker.	Verify with DCS.	
15.	The Evap is ready for service or boil.	Evaporator is ready to fill.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

(Phos)

How to collect an Acid Sample

Phos-Ops-02

02/24/2003

Reviewed by: Josh Regan

Date: 2/16/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform how to collect an acid sample.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Qualified C-Utility Operator, Qualified A evaporator operator, Qualified B evaporator, Qualified A filter operator and a Qualified B filter operator.

Required Documents:

Tools and Equipment: Dipper, Sample bottles, Sample tags

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Rubber Gloves• Hearing Protection• Respirator• Face shield	<ul style="list-style-type: none">• Chemical burns• Thermal burns• Fluorine fumes• Phos Acid fumes	<ul style="list-style-type: none">• All spills need to be contained.• Acid samples need to be disposed of properly.

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AGR-CBI_002966

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BUSINESS INFORMATION PRIVILEGES**

How to collect an Acid sample.

TASKS:

1. How to collect an Acid sample from at tank, pump or a line.
2. Importance of have clean sample bottle.
3. Importance of rinsing the sample bottle out good with the acid you are sampling.
4. Importance of the label with the correct information on the bottle before you take it to the lab.

NOTE

Be aware that when you are out on the tank farm area or around the Distribution Box areas you are required to wear a respirator and have an up dated respirator fit test.

Steps		Key Points	PPE/Hazards
1.	Take a clean sample bottle.	You may have to clean a sample bottle, or take a used sample bottle and wash it out good in the Phos lab before getting a sample.	Need to be sure to dump all the acid residue back to a tank and not just dump it down the sink.
2.	Label sample bottle.	Wipe dry before attaching label to bottle.	

NOTE

When you get your sample be sure to rinse the sample bottle out good a couple of times with the Acid in which you are sampling to prevent contamination of the sample or to get a represent able sample of the exact acid strength.

CAUTION

Face shield must be worn and pulled down. If collecting a sample through a sample spigot, be sure to stand to the side (out of the line of fire) of the end of the spigot. Be sure to close the sample valve all the way after the sample has been collected to prevent it from getting plugged off.

How to collect an Acid sample.

3.	Collect your acid sample.	This could be done by means of a dipper from the top of a tank or from the header on a pump from the wash valve or it maybe at the distribution box. Which could mean dipping it out of the box or getting it from a discharge line through a sample spigot.	<ul style="list-style-type: none">• Respirator.• Rubber gloves• Face shield• Tyvek suit. All spills will need to be contained.
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NOTE

For Filtrate samples, points of collection; 1.) Nonpressered side of a pump (suction) #5 and #8 filtrates from the top of the tanks 2.) Spigot system.

CAUTION

If using spigot system stand away from the line of fire or the end of the spigot. Contents are under pressure and hot and present a possible hazard.

4.	Clean off the out side of the sample bottle.	Need to wipe off the out side of the bottle or clean before taking to the lab.	
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NOTE

If any acid is spilled when sampling, be sure to clean up the mess when finished.

Training Notes:

1. Use of proper PPE when doing any job.
2. Good or proper sampling makes a difference in the end results.
3. Notice the respirator designated areas.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid

Resetting Alarms in the MCC
for the Deluge Sprinkler System

Phos-Normal Ops-01

8/4/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to reset the electronic alarms in the south MCC for the Deluge Sprinkler System.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Day B-Operator certified.

Required Documents: AP-09

Tools and Equipment: N/A

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear		

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AGR-CBI_002970

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Resetting Alarms in the MCC for the Deluge Sprinkler System

TASKS:

1. Reset alarms in MCC.
2. Trouble shoot problems in the Deluge Sprinkler System.

NOTE

If the water is valved off or the system is out of service for eight hours or more, be sure to refer to A.P.-09 for the proper steps to report the outage.

Steps		Key Points	PPE/Hazards
1.	Identify the Deluge Sprinkler System Warning Panel in the south MCC.	North wall. This will identify problems with the system.	

NOTE

The wiring for the Deluge Sprinkler System is broke down into four different zones. From the left to the right, there are zones 1-4 with their own alarm lights. This is so the E&I department can identify which zone has the electrical problem. If these alarms are activated contact the E&I department.

2.	Verify if there are any Water Flow alarm lights on.	These alarm lights are red in color.	
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NOTE

If there are any Water Flow alarm lights on, begin troubleshooting. This will be done at the main deluge system on the bottom floor just north of the main entrance on the east side of the Phos building.

3.	Verify if there is water pressure by checking the gauge.	This is to be done first.	
4.	Verify the wells are operating properly with the DCS operator.		

NOTE

If the wells are not running you must wait for them to be put back in service. Then the Water Flow alarm lights can be reset at the alarm panel.

Resetting Alarms in the MCC for the Deluge Sprinkler System

Steps		Key Points	PPE/Hazards
5.	Check the strainer between #1 & #2 Deluge Sprinkler block valves.	If strainer is plugged this will cause the pressure gauge to read zero pounds of pressure.	
6.	Open strainer drain valves.	Water should flow out.	
7.	Rod out valves if water does not flow to unplug the valve.	This will positively show there is flow.	Slick surface and sand spraying out of the valve.
8.	Shut drain valves.	This will charge up the lines to the Clapper valves.	
9.	Verify there is pressure on the pressure gauge.	This will confirm the system is charged.	

NOTE

If this works try the reset buttons on the Deluge Sprinkler System. If the lights remain on contact the E&I department, there may be solenoid problems in the system.

NOTE

In the winter the water lines and solenoids can freeze up. If this happens the Audible CKT alarm will be activated. The lights for this alarm are amber in color.

10.	Verify if the Audible CKT alarms are activated.		
11.	Check for frozen lines or solenoids.		
12.	Thaw the frozen lines or solenoids.		
13.	Reset the alarms in the MCC.		

NOTE

If following these steps do not reset the alarms contact the E&I department immediately. The Deluge Sprinkler System must be on line when the Super Units are running.



Conda Phosphate Operations
Standard Operating Procedures
(Phos)

Plate and Frame Heat Exchanger Cleaning.

Phos-Normal Op-02
04/13/2004

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the cleaning of the plate and frame heat exchangers.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified A-evaporator, Certified C-Utility operator, Certified Day-B operator,

Required Documents: Procedures for Lockout/Isolation of the Plate and Frame Heat Exchanger, Normal Shutdown of the Enclosed Loop, and Normal Start up of the Enclosed Loop. If using the PPA water blaster refer to their procedure for water blaster operation.

Tools and Equipment: Radio communication, and (Hotsy) Water Blaster or PPA Water Blaster.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety toe foot wear• Rubber Gloves• Rubber Boots• Face Shield• Tyvek Suit	<ul style="list-style-type: none">• Chemical Burns• Pond Water• Sharp Edges	<ul style="list-style-type: none">• All spills must be contained

Plate and Frame Heat Exchanger cleaning.

TASKS:

1. Opening and closing valves.
2. Sliding exchanger plates.
3. Water blasting plates.
4. Lockout/Isolation of equipment.
5. Inspect gaskets.

Steps		Key Points	PPE/Hazards
1.	Close the pond water suction and the discharge valves to the heat exchanger.	Open bleed valve.	
2.	Close the cooling water suction and discharge valves to the heat exchanger.	Open bleed valve.	
3.	Lockout and tag out the suction and discharge valves on the pond water, and the cooling water sides.	Four valves to lockout. Refer to lockout /Isolation procedure for the plate and frame heat exchanger.	
4.	Instruct maintenance to open the heat exchanger.		Pond water exposure.

CAUTION

Damage can occur to the rubber gaskets while cleaning or separating plates. Be extremely careful while performing this task. Do not damage the gaskets with the water blaster. Do not exceed 800-900psi on the PPA water blaster or the Hotsy or damage may result to the equipment.

5.	Spread exchanger and water blast both sides of Plates until completed.		
6.	Reinstall any gaskets that may have come loose during cleaning.		
7.	Instruct maintenance to reassemble the heat exchanger.		
8.	Inspect the heat exchanger to be sure it has been correctly assembled.		
9.	Unlock the heat exchanger.		
10.	Bring the heat exchanger back in service and check for leaks.	Refer to normal start up of the enclosed loop.	

Plate and Frame Heat Exchanger cleaning.

11.	Shut heat exchanger back down if not needed.	Refer to normal shut down of the enclosed loop.	
12.	Clean up and store equipment away.		

Training Notes:

1. How to hotsy blast the plate and frame heat exchangers.
2. How to lock out and isolate the heat exchangers.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

**DRAINING THERMINOL FROM THE SUPER UNIT PUMP
ASSOCIATED LINE.**

PHOS-normal -01

03/06/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the draining therminol from the super unit pump and associated lines.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified A-evap.

Required Documents: MSDS on therminol. Refer to the Emergency shutdown of a super unit procedure. Refer to the Therminol isolation / lockout.

Tools and Equipment: Valve wrench, 3/4" hose and fittings.

PE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear	<ul style="list-style-type: none">• Thermal burns (therminol temperature coming off the burner will be around 400 to 500 degrees F.) You always cool down first.	<ul style="list-style-type: none">• Therminol spills need to be contained and reported.

DRAINING THERMINOL FROM THE SUPER UNIT PUMP AND ASSOCIATED LINES

TASKS:

1. Drain therminol from the super unit pump to the holding tank system.
2. Absorbing and containing therminol spills.
3. Proper disposal of contaminated therminol into labeled barrels transferred to the sight.

Steps		Key Points	PPE/Hazards
1.	Drain the acid or water from the SPA unit.	This doesn't necessarily need to be done before you drain the therminol.	All spills need to be reported and contained.

CAUTION

If therminol temperature is above 100 degrees (f), wear a saranex suit or rubber suit, face shield, rubber gloves, and rubber boots. If below 100 degrees (f), a tyvek suit, rubber gloves and face shield should be worn. Refer to the MSDS on therminol. Absorb the affected area, with absorbent pads.

2.	Shut off the therminol circulation pump.	Refer to lock out and isolations of the therminol pump.	All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.
3.	Starting at the storage tank, inspect all valves.	Verify that you are lined up going from the tank to the desired unit.	All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.

DRAINING THERMINOL FROM THE SUPER UNIT PUMP AND ASSOCIATED LINES

DANGER

Never try to transfer therminol before cooling it down; we do not have equipment to handle these temperatures. Temperatures will be 400 to 500 degrees (f).

4.	Crack open the drain on the desired unit.	Finish opening the drain valve.	All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.
5.	Start the storage tank pump.	Be sure that the vent line at the top of the unit is opened.	
6.	Verify and monitor the flows going into the storage tank.		All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.
7.	Shut off the storage tank pump.	When the flow stops and isolate as needed.	

NOTE

To refill, leave vent line open at the top of the unit and open the valves going from the storage tank, to the bottom of the desired unit. If the burner coil has been drained also, the therminol circulation pump will have to be "jogged" in order to push trapped air out of the pump.

8.	Close the vent lines.	Once this job is completed be sure to complete the clean up.	All therminol spills will need to be contained absorbed and reported. Then properly cleaned up and put into a labeled sealed barrel, dated and moved to the waste site.
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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

(Phos)

How to run an EMF sample on Tank 54 or on a Super Unit.

Phos-Normal Op-01
03/05/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to run an EMF sample on tank 54 or on a Super Unit.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified A-evaporator, Certified B-Evaporator Operator, and Certified A-Evaporator Operator.

Required Documents:

Tools and Equipment: Radio Communication, Plastic Graduation Cylinder or a Stainless Steel Cylinder, Plastic Sample Bottle, and ballast.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety toe foot wear• Rubber Gloves• Rubber Boots• Face Shield• Tyvek Suit	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns	<ul style="list-style-type: none">• All spills must be contained

How to run a EMF sample on tank 54 or a Super Unit.

TASKS:

1. Gather the acid sample.
2. Run an EMF on the sample.

NOTE

An EMF sample on the super unit is to be gathered on the product pump sample port valve on the #2 super unit unless it is down for any reason, then get a sample on the #1 super unit. The sample on tank 54 is gathered by the SPA loading crew operator and brought over to Phos. These samples are ran every four hours to verify the correct amount of Nitric acid ratio in relation to the super acid.

Steps		Key Points	PPE/Hazards
1.	Fill a clean and dry sample bottle of 72% acid and return to Phos Lab room for analysis.	Fill bottle one Half full.	
2.	Turn on electronic digital scale.		
3.	Set glass beaker on the scale with the magnet inside.	To zero the scale.	<ul style="list-style-type: none">• Safety glasses required.
4.	Pour acid sample slowly into the beaker.	Stop, when weight registers fifteen grams exactly.	<ul style="list-style-type: none">• Safety glasses required.
5.	Push the tare button.		<ul style="list-style-type: none">• Safety glasses required.
6.	Multiply the total gram weight by 1.25 to obtain the answer.	Use a calculator. Record your answer on scratch paper.	<ul style="list-style-type: none">• Safety glasses required.
7.	Push the tare button.		<ul style="list-style-type: none">• Safety glasses required.
8.	Slowly pour water on top of acid and Nitric solution into breaker.		<ul style="list-style-type: none">• Safety glasses required.

How to run a EMF sample on tank 54 or a Super Unit.

9.	Remove glass beaker from scale.		• Safety glasses required.
10.	Set electronic probe into the acid sample.	To test Nitric acid to Super Acid ratio.	• Safety glasses required.
11.	Record answer on data entry screen on the computer.	When ready light comes on.	• Safety glasses required.

NOTE

Sample tank 54 in the same manner and record answer on the data entry screen on the computer.

Training Notes:

1. How to run an EMF sample properly.
2. Where to get the EMF samples.
3. EMF sample is ran in order to keep the oxidation reactor acid in line going to super acid storage, this dictates how much Nitric acid is needed to be added to the super acid to maintain the spec's of a 900 EMF to a 950 EMF.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Annual Test of the Deluge
Sprinkler System Alarms

PHOS-ops -01
08/05/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to test the alarms on the Deluge Sprinkler System.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified day B-operator certified A- evaporator operator.

Required Documents: Operations manual of the deluge valve system. AP-09.

Tools and Equipment: Valve wrench, 3/4" end wrench.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear		

Annual Test of the Deluge Sprinkler System Alarms

TASKS:

1. Successfully set the deluge valves.
2. Importance of the steps to do this procedure.

NOTE

If the water is valved off or the system is out of service for eight hours or more, be sure to refer to A.P.-09 for the proper steps to report the outage.

NOTE

The main water supply block valves for both systems should remain locked in the open position with valve covers on them. They should also be greased periodically as well as the locks.

Steps		Key Points	PPE/Hazards
1.	Close main water supply block valve.	This is the water supply block valve to the deluge valve; this will release pressure away from this system.	
2.	Pull the manual emergency trip handles.	Located in the control room for #1 and #2 SPA Units and by #6 and #7 evaporator.	

NOTE

There are two manual emergency trip handles in the field. They are located by #6 Evap for the #1 Unit and on the east wall by #7 Evap for the #2 Unit. These handles must be tested separately from the manual trips in the control room. Keys will be needed to reset both sets of handles in the off position.

3.	Check with the DCS operator to verify the alarms have been activated.		
4.	Open main drain valve on the discharge or the clapper valve.	This is to ensure pressure is off the system.	
5.	When water stops from drain valve close drain valve.		
6.	Close valve that pressures lock pin to clapper valve.	This is so clapper valve can be resealed.	

Annual Test of the Deluge Sprinkler System Alarms

7.	Pull manual lock pin out.	This is so clapper valve can be reseated.	
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NOTE

Under normal circumstances, the reseating of the clapper valve can be heard; however, during an annual operation test procedure, for example, due to minimal flow through a partially opened main control valve, the clapper may not latch open. In which case the reseating sound of the clapper will not be heard. Also under normal circumstances, water pressure in the riser will have exerted sufficient force on the diaphragm so as to have emptied most of the water from the diaphragm chamber, which in turn, will ease the pushing of the reset knob.

8.	Reset clapper valve.		
9.	Push manual lock pin in.	This will hold the clapper valve in place.	
10.	Open valve that pressures the lock pin to the clapper valve.	This will lock clapper the valve down.	
11.	Open main water to the deluge block valve slowly.	This will pressure up line to clapper valve. Watch the water pressure gauges you should show the same pressure as the plant water pressure.	

NOTE

In order to prevent the possibility of a subsequent operation of an overheated solder type pilot sprinkler, any solder type pilot sprinklers which were possibly exposed to a temperature greater than their maximum rated ambient must be replaced. By cracking open the drain valve slowly this will tell you whether your clapper valve is locked into place, as long as no water comes out. Then close drain valve.

12.	Reset electric detection system.	Located in the south motor control center on the north wall. When all the lights go out on the panel, the green power light should remain on.	
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Annual Test of the Deluge Sprinkler System Alarms

13.	Contact the DCS operator.	To verify that warning lights are back to normal. If so, the system should be on line.	
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NOTE

Trouble shooting: if water comes out of the drain valve, then close main block valve and pull cover off of the side of the clapper valve diaphragm and reset by hand to make sure the clapper valve is down and pinned.

Training Notes:

1. How to reset the Deluge system.
2. How to trouble shoot the deluge system.



Conda Phosphate Operations
Standard Operating Procedures
(Phos)

Reading a Specific Gravity on an Acid Sample.

Phos-Normal Op-01
03/05/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to read a specific gravity on an acid sample.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified C-utility Operator, Certified B-Evaporator Operator, Certified A-Evaporator Operator, Certified A-Filter Operator, Certified Day-B operator, and a Certified B-Filter Operator.

Required Documents:

Tools and Equipment: Radio Communication, A 1.600 to 1.800 hydrometer, A 1.800 to 2.000 hydrometer, A 0-250 milliliter graduated cylinder.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety toe foot wear• Rubber Gloves• Rubber Boots• Face Shield	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns	<ul style="list-style-type: none">• All spills must be contained

Reading a Specific Gravity on an acid sample.

TASKS:

1. Gathering an acid sample in a graduating cylinder.
2. Reading a specific gravity of acid.

NOTE

When sampling 52% Acid, used a 1.600 to 1.800 hydrometer.

When sampling 72% acid, use a 1.800 to 2.000 Hydrometer.

Steps		Key Points	PPE/Hazards
1.	Fill graduating cylinder with 52% acid.	Use a 0-250 milliliter cylinder.	<ul style="list-style-type: none">• Thermal burns• Chemical burns
2.	Set Hydrometer into the Acid.	Use a 1.600 to 1.800 Milliliter hydrometer.	

NOTE

If hydrometer is left in the acid sample for too long, acid will cool and hydrometer reading will be slightly higher. It is important to read the scale of specific gravity as soon as possible and to be consistent with each reading.

3.	Read hydrometer.	Hydrometer will settle into liquid, then stop.	
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CAUTION

When gathering a super acid sample, be aware that the super acid temperature is going to be around 350 degrees (f) and when the hydrometer is placed into hot acid, acid will splatter because of it's extreme temperature. Also acid samples should cool at least ten minutes prior to pouring into a plastic sample bottle, otherwise the bottle will melt.

4.	Fill stainless steel pipe cylinder with 72% acid.	Use a 0 to 250 milliliter cylinder.	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns• Face Shield Required
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Reading a Specific Gravity on an acid sample.

5.	Set Hydrometer into the acid	Use a 1.800 to 2.000 Milliliter hydrometer.	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns
6.	After sampling, dump used acid in bucket and put hydrometer back in clean water beaker.		

Training Notes:

1. The importance of reading a specific gravity accurately.
2. The importance of checking and replacing a hydrometer.
3. The importance of how a specific gravity applies to our process.

Reading a Specific Gravity on an acid sample.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures
PHOS

HOW TO SPIN OUT ACID SOLIDS.

PHOS-Startup-01
03/17/04

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to detect percent solids in the acid.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. C- utility certified

Required Documents:

Tools and Equipment: Radio communication, sample bucket containing empty plastic bottles, Respirator, Pear shaped centrifuge tubes.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Safety Toe Footwear• Hearing Protection• Rubber Gloves• Rubber boots• Respirator• Latex gloves	<ul style="list-style-type: none">• Chemical burns.• Thermal burns.• Inhaling fluorine fumes.	<ul style="list-style-type: none">• Spilled acid needs to be contained.• Waste sample bucket needs to be dumped in the proper place at the end of each shift. (#1 filtrate tank works well.)

How to spinout acid solids.

TASKS:

1. Using a stainless steel dipper to gather samples.
2. Pouring acid samples into pear shaped centrifuge tubes.
3. Starting and stopping the centrifuge.
4. Reading solids content.

NOTE

Spinout samples are normally gathered every four hours; sample bottles are filled and put into the bucket, and then taken to the control room.

Rinse off the acid residue on the outside of the bottles in the sink in the lab room, or at the sample table at the distribution box.

NOTE

Acid samples need to be shaken up and mixed thoroughly before pouring into the centrifuge tubes. Also to keep balance in the centrifuge, it is important that the samples are placed opposite of each other, be of the same specific gravity so as not to imbalance the centrifuge.

Steps		Key Points	PPE/Hazards
1.	Shake up acid samples thoroughly in the bottle.	Make sure the lid is on tight.	Use latex gloves.
2.	Pour the acid samples into the centrifuge tubes.	Fill to the 100 ML mark.	Use latex gloves.
3.	Start the centrifuge.	When four tubes are filled and placed into the centrifuge. 1500 RPM is maximum speed.	
4.	Set the timer for no less than four minutes for acid samples and six minutes for Tk. #47.	The timer will stop the centrifuge.	

NOTE

Do not pour off any of the acid in the centrifuge tube prior to taking the reading.

5.	Read the solids level content in the tube to the nearest .1 ml mark.	Log on a sheet of paper.	
6.	Pour used acid from the tube into a bucket.		
7.	Rinse the centrifuge tube clean.		
8.	Continue spinning samples until completed.		

How to spinout acid solids.

9.	Record spinout readings on the DATA entry screen on the computer.	Refer to entering data on the computer procured.	
10.	Clean the out side and the inside of the centrifuge after each use.		
11.	Dump the bucket used to store the waste samples.	#1 filtrate tank works well.	

How to spinout acid solids.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____

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AGR-CBI_002996
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Conda Phosphate Operations
Standard Operating Procedures
(Phos)

How to run a titration of the water samples.

Phos-Ops-01
03/01/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform how run a titration of a water sample.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified C-Utility Operator, Certified A evaporator operator, Certified B evaporator, Certified A filter operator and a Certified B filter operator.

Required Documents: MSDS's on Phenol phalene , NAOH,

Tools and Equipment: Sample bottles, 10 ML pipette, Magnet Stirrer, Magnet, 125 ML beaker and 100 ML graduated cylinder titration pipette.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Leather or Rubber Gloves• Hearing Protection	<ul style="list-style-type: none">• Chemical burns• Fluorine fumes	<ul style="list-style-type: none">• All spills need to be contained.

How to run a titration of the water samples.

TASKS:

1. How to collect a water sample from a sample line.
2. Importance of have clean sample bottle.
3. Importance of rinsing the sample bottle out good with the water sample you are sampling.
4. Importance of the label with the correct information on the bottle.

NOTE

When working in the Lab you are required to wear your safety glasses when ever doing titrations or any Lab work.

	Steps	Key Points	PPE/Hazards
1.	Take a 10 (MLS) milliliters sample of your water sample.	You will take this sample by using a 10 (ML) milliliter pipette.	When working in the Lab you are required to wear your safety glasses when ever doing titrations or any Lab work.
2.	Put your 10milliliter sample into the 125-milliliter beaker with a stirring magnet already in it.	The 125 ML beaker will be sitting on the magnet-stirring table.	When working in the Lab you are required to wear your safety glasses when ever doing titrations or any Lab work.
3.	Turn on the Magnet stirring table.	This controller is a vary speed controller, it will turn as fast as you need it to mix the sample.	When working in the Lab you are required to wear your safety glasses when ever doing titrations or any Lab work.

NOTE

The purposes of these titrations are to let you know how much acid you may be loosing to the pond. This is a direct effect of your percent recovery calculation.

4.	Add 2 to 3 drops of the Phenol to your sample.	Phenol is a reagent that is used to help you see the color change of your titration.	When working in the Lab you are required to wear your safety glasses when ever doing titrations or any Lab work.
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How to run a titration of the water samples.

5.	Slowly titrate your sample a drop at a time while it is sitting on the stirring plate.	To do the titration part of this is done by means of a graduated cylinder that's full of NAOH or that the cylinder is 100 MLS full to start with. As you drip one drop at a time in to your sample you are watching for the sample to turn colors from clear to pink. Once the color changes from clear to pink stop the titration and read your graduated cylinder this will be your results to be documented.	When working in the Lab you are required to wear your safety glasses when ever doing titrations or any Lab work.
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NOTE

All titration results are based off of the incoming pond water titrates. If your sample is higher than the incoming pond you need to let your Supervisor or the A Evaporator, B Evaporator, B filter, or the A filter Operator know of your results as soon as possible so they can take corrective actions.

6.	Enter you sample titration results in to the Data entry of the computer.	Refer to the procedure on how to enter readings on the Data Entry screen.	
----	--	--	--

Training Notes:

1. Use of proper PPE when doing any job.
2. Good or proper sampling makes a difference in the end results.
3. Good or proper sample titration makes a difference in the end results of good recoveries and over all plant efficiency's.

How to run a titration of the water samples.



Conda Phosphate Operations

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Conda Phosphate Operations

Standard Operating Procedures

PHOS

Water Blasting Using the Foot Pedal and Snake

PHOS-Normal Op-02

04/06/04

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to water blast the Foot Pedal and Snake. Used for various jobs in PHOS.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be a certified Operator qualified in the proper use of the Water Blasting System with the Foot Pedal and Snake.

Required Documents:

Tools and Equipment: Radio communication, Water Blaster, Water Blasting Hose and Water Blasting Fittings, Water Blasting Foot Pedal or Valve, and Water Blasting Snake with Water Blasting Tip, Teflon Tape, Channel Locks, Pipe Wrenches, Barricades, Warning or Danger Tape with appropriate tags, and Whip Checks.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear• Face Shield• Tyvek Suit• Rubber Gloves• Rubber Boots• Turtle Skin• Blasting Armor	<ul style="list-style-type: none">• High Pressure System• Possible loss of balance• Injury from high pressure water• Flying debris	

Water Blasting Using the Foot Pedal and Snake

TASKS:

1. Connecting Water Blaster Hoses.
2. Connecting Water Blaster Foot Pedal.
3. May need to change Snake or Snake Blasting Tip (PSI Rated Fittings).
4. Adjusting Blaster PSI to correct PSI for job task.
5. Need to change out Water Blaster Hose to Foot Pedal connection.(Need to be PSI Rated Fittings).
6. Use of Whip Checks on all hose joints.

NOTE

Depending on what is being blasted with the Foot Pedal and Snake Blaster determines what Lockout, Isolation and Shutdown procedure will apply.

Steps		Key Points	PPE/Hazards
1.	Fill out Water Blaster check list.		
2.	Inspect the Water Blaster equipment.	Inspect hoses for fraying or wear. Inspect fittings, Water Blaster Tip, Foot Pedal Snake, and Foot Pedal Trigger. Verify that they are free and working.	
3.	Secure the area being worked in.	Use Warning Tape, Danger Tape, and proper tags or barricades.	
4.	Install whip checks on all water blasting hose joints.		

NOTE

When the area is secured and Lockout Isolation has been done, have all appropriate PPE including the Turtle Skin. Verify that all Foot Pedal Valves and Snake are ready for use.

5.	Start Water Blaster Pump.	Use radio control and have another Operator start the Blaster Pump.	
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Water Blasting Using the Foot Pedal and Snake

NOTE

Anytime the water blaster is set at 4000 psi or higher a safety watchman is required. The DCS operator will start-up and shut down the Water Blaster. This will eliminate the need for an operator to be on stand-by by the Water Blaster.

6.	Set Water Blaster pressure.	Open Manual Valve off of the Foot Pedal to Snake Hose and step down on trigger. Use radio control to have Operator set pressure where needed.	
----	-----------------------------	---	--

NOTE

When blasting tubes on a Tube Bundle, use the Water Blaster Foot Pedal and Snake. Could be blasting Steam Jets on Evaps or various lines.

CAUTION

When using a Foot Pedal Snake, be aware that the Snake could rupture or the Blasting Tip could break off, come undone off of the end of the Snake, which could cause the hose to come back in your direction.

Be aware that the tip is designed to pull forward by means of the Jet Holes on the tip, spraying back towards you.

NEVER pull out of the tube, pipe, jets or whatever is being blasted while the Trigger Pedal is engaged. Serious injury would result.

7.	Shut off the Water Blaster.	Radio communication. Stop Water Blaster and disconnect Water Blaster Hose.	
----	-----------------------------	--	--

NOTE

Depending on temperatures, it is necessary to drain hoses before putting away. This prevents freeze-ups.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____

Normal Operations



Conda Phosphate Operations
Standard Operating Procedures

(Phos)

Rodding out the Super Unit Product Piping into the Oxidation Reactor.

Phos-Normal Op-01
03/03/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to rod out the Super Unit product piping into the Oxidation Reactor.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators, Certified A-evaporator, Certified B-evaporator operator, and Certified DCS operator.

Required Documents: Normal shut down of a pump, and lockout and isolation procedure of the oxidation feed pump.

Tools and Equipment: Radio communication, Nox Monitor, Wrenches, Channel Locks, and piping cleanout bar.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety toe foot wear• Rubber Gloves• Rubber Boots• Face Shield• Turtle Skin	<ul style="list-style-type: none">• Chemical Burns• Thermal Burns• Nox Fumes	<ul style="list-style-type: none">• All spills must be contained

Page 1 of 4

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Rodding out the Super Unit product piping into the Oxidation Reactor.

TASKS: List ALL tasks within this procedure.

1. Redirecting acid flows.
2. Opening and closing valves.
3. Starting and stopping pumps.
4. Connecting and disconnecting 3/4" air hoses.
5. Installing and removing stainless steel blanks.
6. Rodding out piping with cleaning bar.

NOTE

When the flow of super acid decreases to the oxidation reactor, and the amps on the oxidation feed pump increase, acid flow is restricting into oxidation reactor resulting in a full oxidation feed tank and possible entrainment of the super unit.

Steps		Key Points	PPE/Hazards
1.	Manually open the product cooler tank supply valve.	Located off of the vapor head.	
2.	Close the oxidation feed tank supply valve.	Located off of the vapor head. This step will allow you to by-pass the Oxidation Reactor.	
3.	Shut off the oxidation feed pump.	DCS	
4.	Close the product Cooler Recirculation valves.	DCS will close the automatic.	
5.	Shut off the cooler feed pump.	This to keep the acid going to storage from getting too hot. Because of having the super unit product going to the product cooler tank, instead of the Oxidation Reactor.	
6.	Close the cooler feed pump discharge valve.		
7.	Close the suction and the discharge valves to the oxidation feed pump.	Open bleed valve.	
8.	Lockout the oxidation feed pump breaker, suction, and discharge valves.	Instruct DCS to check start/stop. Refer to the isolation and the lockout procedure.	

Rodding out the Super Unit product piping into the Oxidation Reactor.

CAUTION

Before going up on top of the Oxidation Reactor, Verify with DCS that there is no Nox present. Carry a Nox monitor. If Nox is present, it may be necessary to shut off the Nitric pump while piping is being cleaned.

9.	Proceed to the top of the Oxidation Reactor.		
10.	Using hand tools, remove the blank on the piping tree.	Top blank.	Nox may be present, carry a Nox monitor.
11.	Rod out the piping going into the Oxidation Reactor until clean.	Using the piping cleanout bar.	Nox may be present, carry a Nox monitor.
12.	Reinstall the gasket and the blank.		
13.	Gather tools and step down off of the Oxidation Reactor.	Check out with DCS.	
14.	Unlock the discharge valve on the Oxidation feed pump.	Close bleed valve.	
15.	Open the discharge valve on the Oxidation feed pump.		
16.	Unlock the Oxidation feed pump breaker.	Energize breaker.	
17.	Start the Oxidation feed pump.	Instruct DCS to start pump.	
18.	Open Oxidation feed pump suction valve.		
19.	Open the oxidation feed tank supply valve.		
20.	Close the Product cooler tank supply valve.		
21.	Start the Cooler feed pump.	Instruct DCS to start pump.	
22.	Open the Product Cooler Recirculation valves.	DCS will open the automatic at 40 GPM.	
23.	Verify with DCS that there is a good flow of acid into the Oxidation Reactor.		
24.	Store all tools away.		

Training Notes:

1. How to rod out the Super Unit product piping into the Oxidation Reactor.
2. Use of a personal Nox Monitor.
3. Use of isolation / lockouts on specific equipment.

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Rodding out the Super Unit product piping into the Oxidation Reactor.

4. Use of lock / tag and try in the field and at the DCS.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

(Phos)

Gather and take Samples to the Lab.

Phos-Ops-01
03/01/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform how to gather and take samples to the Lab.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified C-Utility Operator, Certified A evaporator operator, Certified B evaporator, Certified A filter operator and a Certified B filter operator.

Required Documents: None.

Tools and Equipment: Access to a truck, and Radio communication.

PPE	Hazards	Environmental Considerations
• None	• None	• None

Gather and take Samples to the Lab.

TASKS:

1. Have a working knowledge of the sample schedule times.
2. Importance of getting the samples to Lab on time.
3. Drive the plant speed limit at all times of (10 Miles per. Hour).

NOTE

Need to under stand that if we can not get the samples to the Lab in time then we need to make sure and call the Lab department at (ext.315) to let them know that there samples will be late. This way we will not be holding them up and they can start on something different until our samples get there. It's important that we keep up our end of the service agreement with the Lab.

NOTE

All the tank samples, water samples, filtrate samples, and cake balance samples are gathered by the Phos operators according to the time schedule below and will be in the tank sample bucket in the Phos Lab, and at the bottom of the fire escape stairs in the new filter building to be picked up by the C Utility Operator to go to the Main Plant Lab.

NOTE

If at any time the C Utility operator is busy with other tasks and can not take the samples down to the Main Plant Lab, contact your Shifter for assistance or one of the A operators. It's up to all the operators to make sure these samples make to the main Lab on time.

Steps		Key Points	PPE/Hazards
1.	Gather daily samples from Phos Acid.	<p>The samples to be gathered Daily at 06:00 hrs. Are:</p> <ul style="list-style-type: none">• Gyp Slurry• Pond water• Barometric water• Enclosed Loop• #1 Super Unit Product• #2 Super Unit Product	

Gather and take Samples to the Lab.

2.	Gather daily samples from Phos Acid.	<p>The samples to be gathered Daily at 09:00hrs. Are:</p> <ul style="list-style-type: none"> • #1 or #5 or #8 Filtrate composite sample. This composite sample is only a sample which is taken off of one of the three filters that is running for the day. (Composite sample is when you save a small amount of the sample every hour in a container for a twelve hour period.) 	
3.	Gather daily samples from Phos Acid.	<p>The samples to be gathered Daily at 14:00hrs. Are:</p> <ul style="list-style-type: none"> • Filter Wash water • #1 Super Unit Product • #2 Super Unit Product • #1 Belt Filter Cake composite sample • #2 Belt Filter Cake composite sample • 24-C Filter Cake composite sample 	
4.	Gather daily samples from Phos Acid.	<p>The samples to be gathered Daily at 18:00hrs. Are:</p> <ul style="list-style-type: none"> • Gyp Slurry • Barometric water 	

Gather and take Samples to the Lab.

5.	Gather daily samples from Phos Acid.	<p>The samples to be gathered Daily at 22:00hrs. Are:</p> <ul style="list-style-type: none"> • #1 Super Unit Product • #1 Super Unit Product • #1 or #5 or #8 • Filtrate composite sample. <p>This composite sample is only a sample which is take off of one of the three filters that is running for the day. (Composite sample is when you save a small amount of the sample every hour in a container for a twelve hour period.)</p>	
6.	Gather daily samples from Phos Acid.	<p>The samples to be gathered Daily at 24:00hrs. Are:</p> <ul style="list-style-type: none"> • Tank #12 • Tank #21 • Tank #41 • Tank #26 • Tank #47 • Phos Rock Slurry Composite sample. 	

Gather and take Samples to the Lab.

7.	Gather daily samples from Phos Acid.	The samples to be gathered Daily at 02:00hrs. Are: <ul style="list-style-type: none">• #1 Belt Filter Cake composite sample• #2 Belt Filter Cake composite sample• 24-C Filter Cake composite sample• Filter Wash water	
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NOTE

All the tank samples are gathered by the B Evaporator operator on Sunday evenings and will be in the tank sample bucket in the Phos Lab to be picked up by the C Utility Operator to go to the Main Plant Lab.

8.	Gather samples from Phos Acid on Sunday evenings.	The samples to be gathered on Sunday at 24:00hrs. Are: <ul style="list-style-type: none">• Tank #11-A• Tank #18• Tank #23• Tank #25-A• Tank #52• Tank #53• Tank #54	
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NOTE

If at any time we may need to send extra samples to the Main Plant Lab you will need to go through your Shift Supervisor before sending any. The Shifter will need to fill out some paper work first and notify the Lab.

Gather and take Samples to the Lab.

Training Notes:

1. Learning when, where, and why the samples need to go to the Lab.
2. Become as efficient as possible at your job.
3. Everyone at one time or another may be required to take the samples to the lab.



Conda Phosphate Operations

**OPERATIONS PROCEDURE
ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Normal Operation-52% Acid Wash of an SPA Unit

PHOS-Shutdown-01
02/13/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform a 52% Acid Wash of an SPA unit.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be A-Evap certified.

Required Documents: Start-up of an SPA Unit.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear	<ul style="list-style-type: none">• Contact with hot piping and liquids• Thermal burns	<ul style="list-style-type: none">• Acid spills need to be kept in containment area.• Acid is corrosive.

Normal Shut down- 52% Acid Wash of an SPA Unit

TASKS:

1. Opening and closing valves.
2. Rinsing Evaporator with 52% acid.
3. Redirecting acid flows.
4. Shutting off Burner.

NOTE

Notify DCS when taking an SPA Unit down for 52% acid wash.

Steps		Key Points	PPE/Hazards
1.	Shut off Burner.	Done locally by A-Evap Operator. Leave Therminol Circulation Pump running.	
2.	Align Product Cooler Transfer Pump Valves to 42% Storage.	While diluting SPA Unit.	
3.	Close Product Valve to SPA Storage.	Hook Air Hose up and blow out piping for 1 hour.	
4.	Isolate Suction Valves to Cooler Feed Pump.	There are two valves to close. Open Bleed Valve.	
5.	Open Product Tank Supply Valve.	Valve located off of Vapor Head.	
6.	Close Oxidation Feed Tank Supply Valve and let Oxidation Feed Tank Pump empty.	DCS will put VFD in Manual and speed up pump all of the way.	
7.	Open By-Pass Drain Valve on the Oxidation Feed Tank.		
8.	When Oxidation Feed Tank goes empty: 8.1 Notify DCS to shut off pump. 8.2 Close Discharge Valve. 8.3 Hook up to Plant Air and blow out piping into Reactor.	Blow out piping with air for 15 minutes.	Nox will be present on top of Oxidation Reactor.
9.	Open Bypass Valve by Cooler Feed Pump	DCS will also monitor Cooler Recirculation flow.	
10.	Shut off air from Oxidation Feed Pump to Oxidation Reactor.	Unhook hose, roll up and store away.	

Normal Shut down- 52% Acid Wash of an SPA Unit

11.	Close Product Tank Supply valve.		
12.	Open Oxidation Feed Tank Supply valve.		

NOTE

Communicate with DCS and verify that there is no Nox in Grade Control.

NOTE

Have verification from DCS that Oxidation Feed Tank is empty.

CAUTION

**When blowing air into Oxidation Reactor, pressure will go positive and alarm will sound.
Keep all personnel clear of Oxidation Reactor/Grade Control area. Nox will be present.**

Carry a Nox Monitor.

Barricade Chains will have to be put in place around Grade Control.

13.	Align valves on top of Oxidation Reactor by: 10.1 Open Bypass Valve. 10.2 Close Valve(s) into Oxidation Reactor. 10.3 Open Bleed Valve.	Be sure to check in and out of Grade Control each time. Carry a Nox Monitor.	
14.	Increase the feed and put in auto.		
15.	Align the Cooler Circ line to the Cooler feed pump at 100% open.		

NOTE

If the other SPA Unit is down for any reason, the SPA Feed Pump needs to be shut down and isolated.

16.	Continue diluting SPA Unit.	Until Specific Gravity (SPG) reaches 1.800.	
17.	Continue to circulate the diluted acid to wash the SPA Unit for the desired time.	Two hours for a maximum flush.	

Normal Shut down- 52% Acid Wash of an SPA Unit

NOTE

Communicate with DCS and verify that there is no Nox **before** going on top of the Oxidation Reactor.

16.	Start Oxidation Feed Pump.	DCS will start when there is sufficient tank level.	
17.	Start Cooler Feed Pump.	SPA Unit will now be rinsing through Loop and back to 42% storage. DCS will start.	
18.	Start SPA Unit back up.	Refer to Start-up of an SPA Unit procedure.	
19.	Align valves to go back to storage in the Reactor and close by-pass valves.		
20.	Open valves to Cooler Feed pumps.		
21.	Align valves on Product Transfer pump to go to Tk. #51.		
22.	Blow out the line to Tk#18.		



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos

Blowing out Super Unit product piping

Phos-Normal Operations-01
01/15/03

Reviewed by: _____

Date: _____

Objective: Provide operating personnel with step-by-step instruction on how to perform Blowing out SPA product lines.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified.

Required Documents: N/A.

Tools and Equipment: Air hose, NOX monitor.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat.• Safety Glasses.• Work Gloves.• Safety toe Footwear.• Hearing Protection.	<ul style="list-style-type: none">• Tanks need to have a place for air to escape before blowing in to them, NOX gas off of the oxidation reactor can be life threatening.	<ul style="list-style-type: none">• Acid is corrosive and needs to be in the containment area.

Blowing out Super Unit product piping.

TASKS:

1. Open and close valves.
2. Blowing product out of piping with air.

Steps		Key Points	PPE/Hazards
1.	Verify oxidation feed pump is off.		
2.	Close oxidation feed pump suction valve.		
3.	Open drain valve between suction valve, and pump.		
4.	Verify oxidation feed pump discharge side bleed valve is open.		

CAUTION

All water needs to be blown out of air hose, and piping before hooking up.

5.	Hook up air hose to bleed valve.		
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CAUTION

While blowing air back through the Oxidation feed pump through the suction bleed valve, there may be a chance of the Oxidation Reactor pressure going positive, and therefore people need to be clear of the area.

6.	Turn on air supply.	Air should flow back through pump and out bleed valve first, Approximately 5 minutes.	
----	---------------------	---	--

CAUTION

Air blowing into reactor will make pressure go positive.

7.	Close oxidation feed pump discharge valve.	Airflow will be traveling into the Oxidation Reactor. Blow air for Approximately 15 minutes	
8.	Shut off air supply.		

Blowing out Super Unit product piping.

9.	Verify that NOX is cleared in the oxidation area.		
10.	Close the product cooler feed pump suction valves.	There are two suction valves for one line.	
11.	Open bypass valve.	Located by product cooler feed pump.	

DANGER

**Verify the NOX monitor calibration is updated, and in your possession.
Notify DSC before entering the top of the Oxidation Reactor,
NOX gas can be life threatening with high enough concentrations.**

12.	Close all three valves going in the top of the Oxidation Reactor.	These three valves are on one line only, located after bypass valve	
13.	Open bypass valve.	On top of the Oxidation reactor.	

CAUTION

Product cooler tank has to be below 80% level when blowing lines with air, so air can escape through the vent line.

If the product cooler level indication is not working, then all source of liquid should be isolated going into the product cooler tank, transfer pump needs to run for five minutes.

If there is no power, you may have to drain the tank.

14.	Turn on the air supply by the Oxidation feed pump discharge valve.	Approximately 15 minutes.	
15.	Shut off the air supply.		
16.	Remove the hose and roll up.		

Training Notes:

1. Any time you blown air into a non-vented tank, you will need a means for the air to escape. The liquid level needs to be low enough that the positive pressure is not trying to suspend or push the liquid through the vent line.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

A-Evaporator Operator
Unloading a Nitric truck.

PHOS-Normal OP-01
03/18/2003

Reviewed by: Jerry R. West

Date: 2/22/2005

Objective: To provide operating personnel with step-by-step instruction on how to perform the Unloading of a Nitric Truck.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Certified A-Evaporator Operator.

Required Documents: MSDS on Nitric Acid.

Tools and Equipment: Radio communication. 3/4" air hose with quick coupler pins and a 3" Cam lock fittings.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety toe Footwear.• Safety Glasses.• Hearing Protection• Rubber Gloves• Rubber Boots• Face Shield• Saranex Suit	<ul style="list-style-type: none">• Nitric Acid• Chemical burns• Thermal burns• NOX gas	<ul style="list-style-type: none">• Nitric Acid spills need to be contained.

A-Evaporator Operator Unloading a Nitric Truck.

TASKS:

1. Clear and concise Radio Communications.
2. Connecting and disconnecting air hoses.

NOTE

Before unloading Nitric truck the unloading signs must be up and the wheels must be chalked.

Steps		Key Points	PPE/Hazards
1.	Verify Nitric acid filling piping drain valve is open.		Full PPE to include a face shield and a Saranex suit.
2.	Verify the fill valve on the Nitric piping is closed.		Full PPE to include a face shield and a Saranex suit.
3.	Remove the camlock end cap.	Located on the fill end of piping.	Full PPE to include a face shield and a Saranex suit.

NOTE

The Nitric Acid truck driver carries the required 2" or 3" camlock hoses needed to fill the Nitric Acid Tank. He will also assist in connecting up hoses.

4.	Connect the required cam lock hose from the Nitric Acid truck to the Nitric Acid piping fitting.		Full PPE to include a face shield and a Saranex suit.
5.	Connect an air hose from a plant air station to the air fitting on the Nitric Acid truck tank.		Full PPE to include a face shield and a Saranex suit.
6.	Verify the air valve on the Nitric Acid truck tank is closed.		Full PPE to include a face shield and a Saranex suit.
7.	Open the plant air valve.	To pressure the air hose to the Nitric Acid truck tank. The truck driver will dictate this.	Full PPE to include a face shield and a Saranex suit.

A-Evaporator Operator Unloading a Nitric Truck.

NOTE

Before you unload the Nitric Trick, instruct the DCS operator to monitor the nitric Acid tank level, so the Nitric Acid tank does not over fill.

8.	Close the bleed valve on the Nitric piping.		Full PPE to include a face shield and a Saranex suit.
9.	Open the main fill valve on the Nitric Acid piping to the tank.	Set the valve wide open.	Full PPE to include a face shield and a Saranex suit.
10.	Open the Nitric Acid truck tank main isolation valve.	Adjustments of this valve will be done or dictated by the truck driver.	Full PPE to include a face shield and a Saranex suit.
11.	Set the air valve on the Nitric Acid truck tank.	The truck driver will set the air valve so air forces the Nitric Acid from the truck tanker into the Nitric Acid storage tank.	Full PPE to include a face shield and a Saranex suit.

NOTE

It is important to notify the DCS operator when the Nitric Acid truck tanker is unloaded and the Nitric Acid tank is full so the DCS operator can reset their counter. As the Nitric Acid truck tanker goes empty, the hose will begin to jump around from the air being pushed into the tank letting you know that the Nitric Acid truck tanker is empty.

12.	Notify the DCS operator when the Nitric Acid storage tank is full.	The DCS operator will reset his counter.	Full PPE to include a face shield and a Saranex suit.
13.	Close the plant air valve.	This will depressurize the air hose to the Nitric Acid truck tanker. The truck driver will dictate this.	Full PPE to include a face shield and a Saranex suit.
14.	Close the Nitric Acid truck isolation valve.	Adjustments of this valve will be done or dictated by the truck driver.	Full PPE to include a face shield and a Saranex suit.
15.	Close the main fill valve on the Nitric Acid piping to the tank.	Shut this valve completely closed.	Full PPE to include a face shield and a Saranex suit.

A-Evaporator Operator Unloading a Nitric Truck.

16.	Open the bleed valve on the Nitric Acid truck system	This will bleed off all the pressure that may be on this system.	Full PPE to include a face shield and a Saranex suit.
17.	Disconnect the Cam Lock hoses from the Nitric Acid truck as well as the Nitric Acid fill line.	This will be done or dictated by the truck driver.	Full PPE to include a face shield and a Saranex suit.
18.	Disconnect the air hose from the Nitric Acid truck.	This will be done or dictated by the truck driver. Roll up all hoses and properly store them.	Full PPE to include a face shield and a Saranex suit.
19.	Reinstall the Cam Lock end cap.	This needs to be installed to the end of the Nitric Acid tank fill line.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Trouble Shooting Floc Skids

PHOS-normal -01
02/17/03

Reviewed by: _____ Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform trouble-shooting floc skids.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. DCS certified, A-evap certified, be sure to check in and out with DCS while in grade control.

Required Documents: MSDS on 869-E.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear	<ul style="list-style-type: none">• Slipping or tripping• Pinch points	

TROUBLE SHOOTING FLOC SKIDS

TASKS:

1. Verifying the floc has an adequate flow to the mixing (T).
2. Starting and stopping the floc pump.
3. Looking for plug age in the floc system.
4. Hooking up and unhooking up hoses.

NOTE

If the mixing systems interlock phases refuse to allow the machine to function, the most common problem is no water flow or no floc flow.

	Steps	Key Points	PPE/Hazards
1.	Turn the machine to the off position.		
2.	Open the 3/4" ball valve to the cylinder, and allow for the floc to rise in the cylinder.	When a readable level is in the cylinder, close the valve.	
3.	Close the 3/4" ball valve on the suction side of the floc pump.		
4.	Close the floc skid suction valve.		
5.	Open the valve to the cylinder and turn the pump on.	The pump will draw the floc out of the cylinder.	

NOTE

If the pump does not draw the floc out of the cylinder, refer to the following.

6.	Stop pump.		
7.	Remove check valve.	Inspect and clean.	
8.	Start pump.	Check floc flow while check valve is removed.	
9.	Stop pump.	If no floc flow.	
10.	Close the floc storage tank header valve.		

TROUBLE SHOOTING FLOC SKIDS

	Steps	Key Points	PPE/Hazards
11.	Hook up an air hose from plant air piping to the 3/4" quick coupler.	Located on the suction of the pump.	
12.	Start the floc pump.		

NOTE

When using plant air to blow out the piping, verify you have air coming out of piping where check valve was removed.

13.	Open the plant air valve.	Blow out piping for one to two minutes.	
14.	Close the plant air valve.	Disconnect air hose and put away.	
15.	Reconnect the floc hose to the flock skid pump.		
16.	Start the floc skid pump.	Verify flow with the check valve removed if not, repeat steps #13-#16.	
17.	Stop the floc skid pump.		
18.	Reinstall the check valve.		
19.	Start the floc skid pump.	Verify flow.	

NOTE

In the event there is still pluggage, stop pump, and clean mixing block on floc piping.

20.	Close the raw water valve to the floc skid.		
21.	Remove the mixing block to clean.		
22.	Reinstall the mixing block.		
23.	Turn on the raw water.		
24.	Start the floc skid pump.	Verify the floc flow.	

TROUBLE SHOOTING FLOC SKIDS

NOTE

The GC floc skid will run if there is no floc flow and it will fill up the floc day tank with raw water. This skid should be checked daily for the proper operation. This skid will not even start if there is not water flow. Check the raw water strainers. If the strainers are clean and there is still no water flow. The raw water line that goes to the mixing block is frozen or the discharge side of the mixing block is frozen. In either case, steam needs to be run over the floc skid or use a heat lamp with a cover to heat the skid. This should solve the problem.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Condensate Washing of the Oxidation Feed Line

PHOS-Normal Op-01

02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the Condensate washing of the Oxidation Feed Line.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified.

Required Documents:

Tools and Equipment: Radio communication, Personal Nox Monitor, 3/4" Air Hose, 3/4" Wire Reinforced 150#-rated Steam Hose, barricades, Barricade Tape, and 3/4"-3" Cam Lock Fitting.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns	<ul style="list-style-type: none">• Acid spills need to be kept in containment area.

Condensate Washing of the Oxidation Feed Line

TASKS:

1. Opening and closing valves.
2. Connect and disconnect Air Hose.
3. Connect and disconnect 150# Steam Hose.
4. Connect and disconnect Condensate Hose.

NOTE

Communicate with DCS first before Condensate washing the Oxidation Feed Line over the side of the Oxidation Tank.

Steps		Key Points	PPE/Hazards
1.	Manually open the Product Cooler Tank Supply Valve.	Located off of the Vapor Head.	
2.	Close the Oxidation Feed Tank Supply Valve.	Have DCS shut off the Oxidation Feed Pump.	
3.	Close Cooler Feed Discharge Valve.	Have DCS shut off Cooler Feed Pump.	
4.	Close Suction and Discharge Valves to Oxidation Feed Pump.	Open Bleed Valve.	

NOTE

Turn on air supply and blow out all moisture before hooking up the Air Hose. When blowing air through Feed Piping, Reactor pressure will go positive and alarm will sound.

5.	Connect ¾" Air Hose to Oxidation Feed Pump Discharge Ball Valve and turn on air supply.	Blow out piping into Reactor for 15 minutes.	
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CAUTION

Before going up on top of Oxidation Reactor, verify with DCS that there is no Nox present.

Carry a Nox Monitor.

6.	Proceed to the top of the Oxidation Reactor.		
7.	Align valves to direct flow to Ditch.		
8.	Double block and bleed flow into Oxidation Reactor Tank.		

Condensate Washing of the Oxidation Feed Line

9.	Return to the Oxidation Feed Pump and connect a ¾" Reinforced 150# Steam Hose to Discharge Side Ball Valve. Cam Lock other end of hose to a Condensate Supply.		Full PPE including Saranex Suit and Face Shield.
10.	Open Condensate Valve and wash piping to Ditch.	Wash piping for 20 minutes.	Full PPE including Saranex Suit and Face Shield.
11.	Close Condensate Valve.	Open Bleed Valve and Depressurize hose.	Full PPE including Saranex Suit and Face Shield.

CAUTION

Verify Condensate Hose is depressurized before unhooking.

12.	Disconnect Condensate Hose and reconnect Air Hose to discharge side of Oxidation Feed Pump and open air valve.	Blow out piping with air for 10 minutes to the Ditch.	
13.	Disconnect Air Hose and open Product Supply Valve to Oxidation Feed Tank and close Supply Valve to Product Cooler Tank.		
14.	Open Suction and Discharge Valves to Oxidation Feed Pump.		
15.	Close both Bleed Valves.		

CAUTION

**Before going up on top of Oxidation Reactor, verify with DCS that there is no Nox present.
Carry a Nox Monitor.**

16.	Proceed to the top of the Oxidation Reactor.		
17.	Start Oxidation Feed Pump.	Communicate with DCS.	
18.	Watch over the side of the tank until observing acid flow out of piping to the Ditch.	Prevents water contamination into the Reactor.	
19.	Align valves so acid flows into Oxidation Reactor.	Close 2" Wash Valve.	

Condensate Washing of the Oxidation Feed Line

20.	Open Discharge Valve on Cooler Feed Pump.		
21.	Start Cooler Feed Pump.	Communicate with DCS.	
22.	Roll up and put away hoses and barricades.		



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid

Collecting a Therminol Sample

Phos Acid-Normal Operations-01
10/02/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to collect a Therminol sample.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified Phos Operator.

Required Documents: MSDS

Tools and Equipment: Small container for holding hot (100 F to 150 F) Therminol oil. Two labeled satellite barrels.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Tyvek suit.• Face shield.• Rubber Boots.• Rubber Gloves.	Therminol is hot and carcinogenic (see MSDS).	Therminol spills need to be contained and reported.

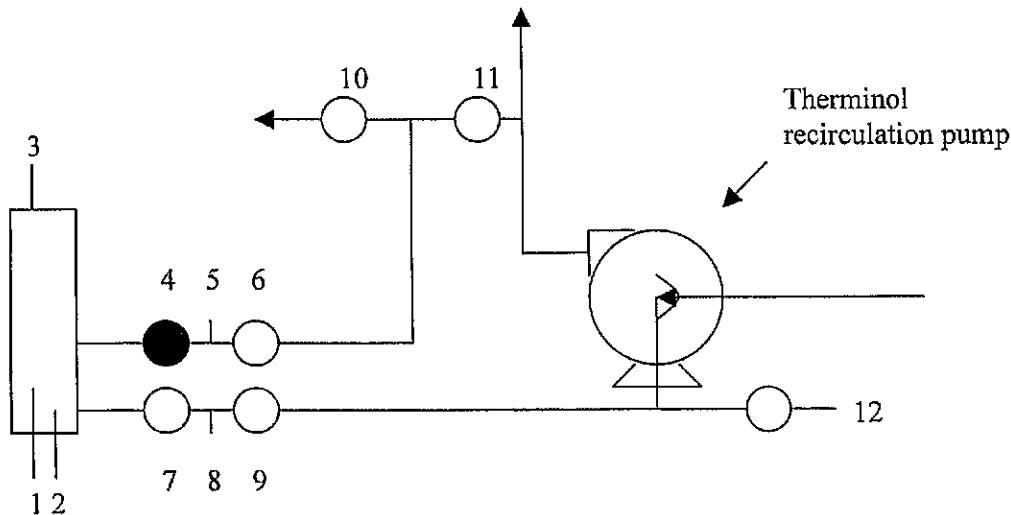
Collecting a Therminol Sample

TASKS:

1. Turning valves.
2. Handling hot material.

Steps		Key Points	PPE/Hazards
1.	Cool Therminol to 100 F using pondwater in the super unit.	This is done during normal boilout.	
2.	Lightly touch piping to verify it is cool enough to collect a sample.		
3.	Open Therminol drain valve #12 off of recirculation pump.		
4.	Let one quart of Therminol flow into a small container.		
5.	Put Therminol directly into a metal sample container.		
6.	Put Therminol in container in satellite barrel.		

Therminol filter vessel



- 1) Dirty chamber drain ball valve
- 2) Clean chamber drain ball valve
- 3) Vent ball valve
- 4) Inlet Globe valve (partially open)
- 5) Inlet Bleed
- 6) Inlet Gate valve (NO)
- 7) Outlet gate valve (NO)
- 8) Outlet bleed
- 9) Outlet gate valve (NO)
- 10) Gate valve isolates from storage tank (NC)
- 11) Gate valve (NO)
- 12) Recirculation pump drain gate valve (NC)

Collecting a Therminol Sample

Standard Operating Control Limits			
SOCL #:			
Deviation	Condition	Consequence	Action To Take
High/High	What is the condition?	What will occur in this status?	What action do we need to pursue to overcome results?
High			
Low			
Low/Low			
Temperature			
Pressure			

Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid
A-Evaporator Normal Operations
Of Tank 21, Tank 24 and Tank 13 for Granulations feed.

Phos -Ops-01
03/19/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal operations of the Tank 21, Tank 24, and Tank 13 for Granulation feed.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be A-Evaporator Operator Certified.

Required Documents:

Tools and Equipment: Radio Communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Leather or Rubber Gloves• Hearing Protection		

A-Evaporator Operations of Tank21, Tank24, and Tank 13 for Granulation feed.

TASKS:

1. Clear and concise Radio Communications.

Steps		Key Points	PPE/Hazards
1.	Coordinate with the B-Evaporator Operator and the Granulation Operator.	To blend and evaporate acid. Product acid to Tank 24, Tank 13 and to Tank 21. To control flows and Tank levels.	
2.	Check all pumps and motors of associated equipment.	Check for vibration and noise.	
3.	Condensate wash pumps and piping to Granulation.	As needed. Refer to condensate washing a pump procedure.	
4.	Check and regulate the North 30% Clarifier Underflow by. 1. Overflow spinout for solids.	Adjust accordingly.	

CAUTION

Before condensate washing the North 30% Clarifier Underflow pump, communicate to the A-Filter Operator of your intentions.

5.	Condensate wash the Tank 24 Clarifier underflow pump.	As needed. Refer to condensate washing a pump procedure.	
6.	Condensate wash the Tank 13 pumps to the ditch at the Distribution box.	As needed. Communicate with the B-Evap operator to put the designated barriers. Refer to condensate washing a pump procedure.	
7.	Communicate with the B-Evap operator to put up the designated barriers.	Tag the barriers as needed.	

Training Notes:

1. Communication from the Phos Acid operations and Granulations operations, in order to make quality product for the company, is Importance

Page 2 of 3

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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures
(Phos)

How to Enter readings on the Data Entry Screen.

Phos-Ops-01
03/01/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform how to Enter readings on the Data Entry Screen.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified C-Utility Operator, Certified A evaporator operator, Certified B evaporator, Certified A filter operator and a Certified B filter operator.

Required Documents:

Tools and Equipment: Computer working knowledge, and sample results.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">None	<ul style="list-style-type: none">None	<ul style="list-style-type: none">All the Data Entry's on Environmental are written records for the State that we are required to have. With out these we are subject to fines.

How to enter reading on the Data Entry Screen.

TASKS:

1. How to enter water sample results or any readings to the computer Data Entry Screen.
2. Importance of entering all results on time.

NOTE

The entry's to the Data Entry screen hourly are very important, this is the means of information for everyone to see how things are doing from hour to hour as well as the records for Environmental limits.

Steps		Key Points	PPE/Hazards
1.	Go to the Phos Over View Screen.	This is where you can find the Data Entry Screen for Phos Acid.	
2.	Go to the Data Entry Screen.	This Data Entry Screen is used for entering the spin out reading. All of the under flows And over flows from the clarifiers, Lamellas and Tanks. Refer to the How to collect an Acid Sample Procedure.	
3.	Go to the Data Entry # 2 Screen.	This Data Entry Screen is used for entering the Water titrates and Specific gravities from the Evaporators, Super Units, Filters, and all Tanks in the Phos Acid Plant. This is also where you enter the tank levels and Chest pressures of the Evaporators.	

How to enter reading on the Data Entry Screen.

4.	Select the desired space for the reading you are entering.	Be sure to select the right hour, and piece of equipment you are wanting to enter.	
5.	Hit enter.	You will need to hit enter after everything you put in the Data Entry or it will not record it nor save it.	
6.	Select the next space for your next entry.	Repeat steps #4 and #5 for every entry needed.	

NOTE

Hourly readings are not done until they are entered into the Data Entry.

Training Notes:

1. Learning how to move around on the computer from screen to screen on the DCS controls.
2. Become as efficient as possible at your job.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

PHOS

CLEANING EVAPORATORS AND SPA EVAPORATORS MAIN CONDENSERS.

PHOS-NORMAL-01

03/05/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to clean Evaporators and SPA Evaporators main condensers.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be A-Evap certified, C- utility certified, Safety watchperson required.

Required Documents: Refer to normal shutdown of an Evaporator.

Refer to normal shutdown of an SPA unit.

Confined space entry permit.

Tools and Equipment: Radio communication, assorted wrenches, air monitor, HF monitor to check for hydrogen fluoride, air horn, padlocks, buckets, 3/4" air hose, picture tags, shovel, scraper, light, respirator.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Hearing Protection• Safety Toe Footwear• Rubber Gloves• Rubber boots• Face shield• Tyvek suit	<ul style="list-style-type: none">• Chemical burns• Back strains• Low LEL	<ul style="list-style-type: none">• All build up needs to be contained and properly disposed of.

Cleaning Evaporators and SPA Evaporators main condensers.

TASKS:

1. Filing out required entry/ confined space permit.
2. Opening and closing Evap main condenser door.
3. Setting up an air horn.
4. Using an air monitor to check the oxygen content and check for dangerous gases.
5. Using a HF monitor to check for hydrogen fluoride.
6. Opening and closing the main condenser valves.

NOTE

Evaporator has been shutdown and drained already, as per the shutdown procedure.

Steps		Key Points	PPE/Hazards
1.	Close the main condenser water valve.	Or instruct the DCS to close the automatic valve, too also.	
2.	Lockout/ tag out the manual valve.	Use a chain with a padlock and a picture tag.	
3.	Open the main condenser door.	Install an air horn if needed.	
4.	Fill out a confined space entry permit.	Have a safety watch person sign the permit.	
5.	Check the air in side the main condenser.	With a calibrated air monitor and a HF monitor.	

NOTE

Before working inside the condenser, cover the center tail leg outlet with a suitable blank, so no debris will not fall into the seal tank, or plug the down leg.

6.	Begin cleaning the inside of the main condenser.	Be sure the safety watch person is stationed outside the vessel.	Tyvek suit and a face shield required. May require A respirator.
7.	Use a bucket inside and fill with debris.	Pass the full bucket to the safety watch person.	Tyvek suit and a face shield required. May require A respirator.

Cleaning Evaporators and SPA Evaporators main condensers.

8.	Close the main condenser door, and install the man way bolts.	After all the buildup and the debris have been removed, all tools and blank are removed.	
9.	Unlock the main condenser water valve.		
10.	Bring equipment in service as needed.		
11.	Clean up the mess and store all tools.	Dump the excess buildup into the concrete dumpster on the eastside of Phos.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures
(Phos)

Cleaning Evaporator Steam Jets.

Phos-Normal Op-01
03/05/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to clean evaporator steam jets.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified A-evaporator Operator, Certified B-Evaporator Operator, and a Certified C- Utility Operator.

Required Documents: Water blasting using the foot pedal and snake procedure.

Tools and Equipment: Radio Communication, Various sized wrenches, screwdriver, hammer, flash light, water blaster foot pedal and snake, Turtle skin gear.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety toe foot wear• Rubber Gloves• Rubber Boots• Face Shield• Turtle Skin	<ul style="list-style-type: none">• Thermal Burns• Chemical Burns	<ul style="list-style-type: none">• All spills must be contained

Cleaning Evaporator Steam Jets.

TASKS:

1. Open and close valves.
2. Disassemble and reassemble steam jets.
3. Water blasting steam jets.

NOTE

Steam jets need to be checked and cleaned while evaporator is down.

Steps		Key Points	PPE/Hazards
1.	Close the primary and secondary steam jet valves.		Contact with hot piping.
2.	Close the pond water ball valve to the inter condenser pot.	Open vacuum breaker.	Spilled pond water needs to be contained.
3.	Remove the bolts on the top of the primary jet head and remove from the air chamber,		Work gloves, surfaces may be hot.

NOTE

Steam jets may need to be water blaster out clean, due to excessive build up.

4.	Inspect the air chamber, primary venturi, and bottom elbow going into inter condenser pot.	Refer to water blasting using a foot pedal and snake procedure id build up is excessive. Inspect, clean, or replace parts as necessary.	Work gloves, surfaces may be hot.
5.	Remove the bolts on the top of the secondary jet head and remove from the air chamber.		Work gloves, surfaces may be hot.
6.	Inspect the air chamber, secondary venturi and down leg,	Refer to water blasting using a foot pedal and snake procedure id build up is excessive. Inspect, clean, or replace parts as necessary.	Work gloves, surfaces may be hot.

Cleaning Evaporator Steam Jets.

7.	Remove the bolts on the top of the intercondenser pot and remove flange.		
8.	Remove the swirler.	Inspect and clean.	
9.	Inspect the intercondenser down leg.	Refer to water blasting using a foot pedal and snake procedure id build up is excessive. Inspect, clean, or replace parts as necessary.	
10.	Reinstall the primary steam jet parts.		
11.	Reinstall the secondary steam jet parts.		
12.	Reinstall the swirler and the gaskets.		
13.	Reinstall the top flange of the intercondenser pot.		
14.	Clean up used bolts and gaskets and dispose of properly.		

Training Notes:

1. How to clean the evaporator or super unit jets.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid
A-Evaporator Operator Duties,
Normal Operation of the Grade Control.

Phos -Ops-01
03/19/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal operations of the Grade Control.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. A-Evaporator Operator Certified.

Required Documents:

Tools and Equipment: Radio Communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Leather or Rubber Gloves• Hearing Protection	<ul style="list-style-type: none">• Thermal burns• Chemical burns• NOX gas	<ul style="list-style-type: none">• All acid spills need to be contained.

A-Evaporator Operator Duties, Normal operation of Grade Control.

TASKS:

1. Clear and concise Radio Communications.

Steps		Key Points	PPE/Hazards
1.	Check all pumps and motors in grade Control.	Check for vibration and noise.	
2.	Check and regulate Clarifier Underflows.	Check with DCS Operator.	
3.	Check the 42% Clarifier Splitter Box.	Inspect for any bad hoses, leaks ETC.	
4.	Check the 42% and 52% Clarifier rake systems by, <ol style="list-style-type: none"> 1. Verify that the Rakes are turning. 2. Verify that the rake leveling system is in auto. 3. Verify the level positioner's level of the rakes. 	The automatic level controller position is a good indication of the solids level. As the Amps increase the rake leveler should rise.	
5.	Check the 42% and 52% Clarifier Feed well mixers for proper operation.		
6.	Check the 42% and 52% Clarifier Floc systems.	Refer to the normal operation, and verify the flows.	
7.	Check the Oxidation Reactor.	For leaks and fuming.	
8.	Check the Nitric Acid system.	Check the system for leaks and fuming.	
9.	Check and pump down the Grade Control sumps. (Grade control sump, Oxidation sump, and the Nitric acid sump)	The Oxidation area sump is not automated due to the fact the operator needs verify what is in the sump, and where the sump is pumping too.	

A-Evaporator Operator Duties, Normal operation of Grade Control.

10.	Visually inspect the Enclosed loop.	For any leaks.	
11.	Start up, Shutdown the Enclosed loop as necessary.	Refer to start up and shutdown of the Enclosed loop.	
12.	Condensate wash the 42% and 52% Clarifier Underflow pumps.	As needed. Refer to condensate washing a pump procedure.	
13.	Check the Fume Abatement system.	Refer to the normal operation of the Fume Abatement system.	

Training Notes:

1. Importance of making hourly rounds and the checking of all your equipment.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid
A-Evaporator Operator Duties,
Normal Operation of the Enclosed Loop.

Phos -Ops-01
03/19/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the normal operations of the Enclosed Loop.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Must be A-Evaporator Operator Certified.

Required Documents:

Tools and Equipment: Radio Communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Leather or Rubber Gloves• Hearing Protection	<ul style="list-style-type: none">• Highly corrosive• Chemical burns	<ul style="list-style-type: none">• All Pond water spills need to be contained and Reported.

A-Evaporator Operator Duties, Normal operation of the Enclosed Loop.

TASKS:

1. Clear and concise Radio Communications.

Steps		Key Points	PPE/Hazards
1.	Control the make up water to #6 and #7 seal Tank (Collection Tank).	To maintain pressure in the enclosed loop and maintain levels in seal tanks. Too much make up pond water in the Enclosed loop system can cause scaling in the Heat exchangers. The make up valve to the Collection Tank is located South of the Old Phos Acid Lunch Room in the pipe rack.	
2.	Maintain Enclosed loop pressure by. 1. Adjusting the evaporator main condensers flow. 2. Adding make up pond water to the Enclosed loop system.	If evaporators/ super units vacuum allows adjusting of the main condenser flows.	
3.	Check the Normal Operation of the #1 Seal Tank pump.	Check for pump and motor vibrations, piping leaks, ETC.	
4.	Check the Normal Operation of the #4 and #5 Seal Tank pump.	Check for pump and motor vibrations, piping leaks, ETC.	
5.	Check the Normal Operation of the #6 and #7 Seal Tank pump.	Check for pump and motor vibrations, piping leaks, ETC. Swap pumps as needed.	
6.	Check the Normal Operation of the Heat Exchangers.	For any leaks.	
7.	Shutdown or bring in service the Heat Exchangers as needed.	Refer to normal start up/shutdown procedures.	
8.	Check the pond water strainers.	For any leaks.	

A-Evaporator Operator Duties, Normal operation of the Enclosed Loop.

9.	Swap the enclosed strainers as needed by. 1. Closing the drain valve on the bottom of strainer that is being put in service. 2. Opening the suction and discharge valves on the strainer that is being put in service. 3. Closing the suction and discharge valve of the strainer being taken out of service. 4. Opening the drain valve on the bottom of strainer being taken out of service.	When putting a strainer into service open the suction valve slowly to pressure up the strainer. Do the same for the discharge valve. Look for leaks.	
10.	Check all Pond water piping visually.	For signs of any leaks.	
11.	Check the Cooling water piping visually.	For signs of any leaks.	

Training Notes:

1. Importance of making hourly rounds and the checking of all your equipment.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

**SETTING OR RESETTING THE DELUGE VALVE
SYSTEM**

PHOS-ops -01
03/06/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the setting or resetting of the deluge valve system procedure.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified day B operator certified A- evaporator operator, certified shifter.

Required Documents: Operations manual of the deluge valve system. AP-09.

Tools and Equipment: valve wrench, 3/4" end wrench.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear		

SETTING OR RESETTING THE DELUGE VALVE SYSTEM

TASKS:

1. Successfully set the deluge valves.
2. Importance of the steps to do this procedure.

NOTE

If the water is valved off or the system is out of service for eight hours or more, be sure to refer to A.P.-09 for the proper steps to report the outage.

NOTE

The main water supply block valves for both systems should remain locked in the open position with valve covers on them. They should also be greased periodically as well as the locks.

Steps		Key Points	PPE/Hazards
1.	Close main water supply block valve.	This is the water supply block valve to the deluge valve; this will release pressure away from this system.	
2.	Open main drain valve on the discharge or the clapper valve.	This is to ensure pressure is off the system.	
3.	When water stops from drain valve close drain valve.		
4.	Close valve that pressures lock pin to clapper valve.	This is so clapper valve can be reseated.	
5.	Pull manual lock pin out.	This is so clapper valve can be reseated.	

NOTE

Under normal circumstances, the reseating of the clapper valve can be heard; however, during an annual operation test procedure, for example, due to minimal flow through a partially opened main control valve, the clapper may not latch open. In which case the reseating sound of the clapper will not be heard. Also under normal circumstances, water pressure in the riser will have exerted sufficient force on the diaphragm so as to have emptied most of the water from the diaphragm chamber, which in turn, will ease the pushing of the reset knob.

6.	Reset clapper valve.		
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SETTING OR RESETTING THE DELUGE VALVE SYSTEM

7.	Push manual lock pin in.	This will hold the clapper valve in place.	
8.	Open valve that pressures the lock pin to the clapper valve.	This will lock clapper the valve down.	
9.	Open main water to the deluge block valve slowly.	This will pressure up line to clapper valve. Watch the water pressure gauges you should show the same pressure as the plant water pressure.	

NOTE

In order to prevent the possibility of a subsequent operation of an overheated solder type pilot sprinkler, any solder type pilot sprinklers which were possibly exposed to a temperature greater than their maximum rated ambient must be replaced. By cracking open the drain valve slowly this will tell you whether your clapper valve is locked into place, as long as no water comes out. Then close drain valve.

10.	Reset electric detection system.	Located in the south motor control center on the north wall. When all the lights go out on the panel, the green power light should remain on.	
11.	Contact the DCS operator.	To verify that warning lights are back to normal. If so, the system should be on line.	

NOTE

Trouble shooting: if water comes out of the drain valve, then close main block valve and pull cover off of the side of the clapper valve diaphragm and reset by hand to make sure the clapper valve is down and pinned.

Training Notes:

1. How to reset the Deluge system.
2. How to trouble shoot the deluge system.



Conda Phosphate Operations

Standard Operating Procedures

Phos Acid

Tank #13 Boil Out

Phos Acid-Normal Operations-01

12/15/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to boil out Tank #13 with condensate or boil out water.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be A-Evap certified.

Required Documents:

Tools and Equipment: 3" Reinforced Hose and Fittings, Condensate Hose and Fittings, Danger Tape with appropriate tags, and barricades for Condensate in use.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear• Face Shield• Saranex Suit• Rubber Gloves• Rubber Boots	<ul style="list-style-type: none">• Thermal Burns• Acid Burns	All spills must be kept in containment area.

Tank #13 Boil Out.

TASKS:

1. Opening and closing valves.
2. Handling hoses.
3. Starting and stopping pumps.
4. Starting Condensate and stopping Condensate.
5. Setting up barricades.
6. Setting up Danger Tape and tags.

Steps		Key Points	PPE/Hazards
1.	Take Tank #13 out of service and drain the acid.		
2.	Shut down Tank #13 pump.		
3.	Swap Tank #13 overflow line to the ditch.	This line is going to the 30% overflow tank.	
4.	Fill with condensate or boil out water.	This can be done through the ring header on the North Clarifier or from #3 LGS feed box overflow pipe that is now going to Tank #13 overflow launder.	
5.	Start Tank #13 agitator.	After the level is above the agitator	
6.	Align the Tank #13 return hose to the overflow pipe on #3 LGS feed box.		
7.	Start the north or south Tank #13 pump.	This will circulate the hot water from Tank #13 through the D.B. Box and back to Tank #13.	
8.	Let excess boil out water over flow to the ditch to maintain a full level in Tank #13.		

Tank #13 Boil Out.

After Tank #13 has boiled out.

Steps		Key Points	PPE/Hazards
9.	Shut down agitator.		
10.	Pull hot water going to Tank #13 out.		
11.	Align Tank #13 pump to the ditch at the D.B. Box.		
12.	Shut down pump and drain water out of pump and line.		

Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS
A-Evaporator Operator
Normal Duties of the Fume Abatement.

PHOS-Normal OP-01
03/18/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the A-Evaporator Operator normal duties of the Tank Farm.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. A-Evaporator Operator certified.

Required Documents:

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety toe foot wear• Rubber Gloves• Rubber Boots• Leather Gloves• Nox Monitor• S.C.B.A. (Scott Air Pack)	<ul style="list-style-type: none">• Nox Gas	

A-Evaporator Operator Normal Duties of the Fume Abatement.

TASKS:

1. Clear and concise Radio Communications.

	Steps	Key Points	PPE/Hazards
1.	Check the Fume Abatement system.	Check for proper operation.	

NOTE

The next three steps pertain to being able to maintain a negative pressure in the Oxidation Reactor.

2.	Check the Fume Abatement Scrubber Tank level.	Drain out as needed.	
3.	Check the to be sure the nitric acid tank over flow piping is sealed.	This over flow piping seals in the Oxidation area sump. Be sure to keep the over flow with a bucket, or with the sump level.	

CAUTION

Before going up on top of the Oxidation Reactor, Verify with the DCS Operator that there is no Nox present and carry a personal Nox monitor. **(2 PPM is the maximum limit of Nox Gas in the {TWA} Time Weighted Average, that is permissible.)** Nitric Acid needs to be shut off going into Oxidation Reactor while rodding out Scrubber piping.

4.	Check for pluggage in the Scrubber piping by; 1. Conducting a vacuum profile of the scrubber ducting system.	If plugged, Remove blank and /or piping plug and clean as necessary. Located on top of the oxidation Reactor.	<ul style="list-style-type: none"> • Nox gas may be present. • Carry a Nox monitor. • May need to use S.C.B.A. or (Scott Air Pack) gear.
5.	Unload Nitric Truck.	Into Nitric Tank. Refer to Unloading Nitric Acid Trucks.	
6.	Check Nitric systems for leaks.	Write work orders as Necessary.	

Training Notes:

1. Working in this area has Life threatening gases. (Be Safe if in-doubt use a S.C.B.A., Don't take chances.)



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

DCS Normal Operation of the Evaporators.

PHOS-Normal OP-01

03/18/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform normal operation of the Evaporators.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. DCS certified.

Required Documents:

Tools and Equipment: Radio communication, Telephone and computer.

PPE	Hazards	Environmental Considerations
	<ul style="list-style-type: none">• Over Heating the Evap/SPA temperature.• Over Heating the Therminol burner.	<ul style="list-style-type: none">• ACID needs to be kept contained.

TASKS:

1. Maintain operating parameters.
2. Clear and concise radio communications.

DCS Normal Operation of the Evaporators.

NOTE

This procedure also applies to the normal operations of the Super Units, Too Also.

Steps		Key Points	PPE/Hazards
1.	Communicate with the field operators.	Regarding start-ups and shutdowns.	
2.	Monitor therminol circulation.	Including flow temperature, ECT.	
3.	Control Evaporator Main condenser water.	Field operators adjust the Super Units, # 1 and #2 main condensers.	
4.	Control the steam to the Evaporators.	To achieve specific gravity (S.P.G.) on the product acid.	
5.	Control the Super Units burner temperatures.	To achieve the desired P2O5 and conversions.	
6.	Control feed to the Evaporators.	To achieve specific gravity (S.P.G.) on the product acid.	
7.	Monitor the feed flows.	Associated with the Evaporator.	
8.	Monitor the motor Amps.	Associated with the Evaporator.	
9.	Monitor the vacuum.	Associated with the Evaporator.	
10.	Monitor the temperatures.	Associated with the Evaporator.	
11.	Monitor the cooling water flow.	Through the Super Units coolers.	
12.	Log readings, problems and Daily occurrences.	Log on computer and in the logbook.	
13.	Back flush pumps.	As necessary.	
14.	Communicate problems.	To the field operators and the supervisors.	
15.	Have Equipment ready for maintenance.	Communicate with the field operator.	
16.	Start/stop pumps motors.	For lockout purposes.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures
Phos Acid
Entry to the Oxidation Area

Phos-Normal Op-02

7/16/2002

Reviewed by: Jerry R West

Date: Feb. 8, 2005

Objective: To provide operating personnel with step-by-step instruction on how to properly enter the Oxidation Containment Area.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. If you are working on the Nitric tank, Oxidation Reactor or opening drain valves, you must have a personal monitor and/or proper PPE. (i.e. SCBA, saranex suit, rubber boots and rubber gloves.) Check with the area Shift Supervisor to verify if full PPE is required or if the task can be completed with just a personal monitor.

Required Documents:

Tools and Equipment: Personal NO₂ monitor.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Leather gloves• Hearing protection• Safety toe footwear	<ul style="list-style-type: none">• Inhalation of NO₂.• Hot contents in Reactor	Release of NO ₂ into the atmosphere.

Page 1 of 3

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Entry to the Oxidation Area

TASKS:

1. DCS check in.
2. Radio communication.

NOTE

If work is being performed on top of the Reactor or Nitric tank, check with the area Shift Supervisor to see if a personal monitor is all that is required for the task or if an SCBA is required for this task.

	Steps	Key Points	PPE/Hazards
1.	Check in with the Phos DCS operator either by radio communication or by checking into the DCS control room.	The A-operator on shift does not have to check in every time they enter or exit the Oxidation area unless they are going above ground level.	

NOTE

When the monitors in the area detect at least 3.0 ppm of NO_2 , the alarms will go off and the nitric pumps will stop feeding the reactor.

2.	If alarms go off, all personnel will leave the Grade Control/Oxidation Containment area and notify the operator in the DCS control room that you have left the area.		
3.	Properly trained operators will put up chains and do not enter signs across stairways into the containment area.		
4.	All personnel will remain outside the containment area until the Phos DCS operator verifies the area is clear.		
5.	Before reentering the area you must check in with the operator in the DCS control room.		
6.	Before leaving the area you must check out with the Phos DCS operator by radio communication or by DCS control room check out.		



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

(Phos)

Installing Trays to (LGS) Lamella Units.

Phos-Ops-01
03/01/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform how to install trays to (LGS) Lamella Units.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified C-Utility Operator, Certified A evaporator operator, Certified B evaporator, Certified A filter operator and a Certified B filter operator.

Required Documents: Washing (LGS) Lamella units, Lock out Isolation of a Lamella, Confined space entry permit.

Tools and Equipment: Vise grips, Air monitor, and a Alignment bar.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Leather or Rubber Gloves• Hearing Protection• Respirator	<ul style="list-style-type: none">• Chemical burns• Fluorine fumes• Pinch points	<ul style="list-style-type: none">• All spills need to be contained.

Page 1 of 4

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Installing trays to (LGS) Lamella Units.

TASKS:

1. How to install trays to the lamella.
2. Use of confined space entry.

NOTE

When you install the trays to the lamellas be aware of pinch points. Also be aware that you may or may not need a respirator depending on which Lamella, If it is #1 Lamella it is not a respirator area. But if you are dealing with #3 or #2 Lamellas a respirator is required to be out in the tank farm area.

Steps		Key Points	PPE/Hazards
1.	Verify that the lock out isolation is completed.	Refer to the lock out isolation of a Lamella.	
2.	Fill out and attach a confined space entry permit to the job sight.	Refer to the Washing a Lamella Unit Procedure. In this procedure it will cover How to pull the bottom door, which will need to be off to install the trays. Verify that all the signatures are on the confined space entry permit and a safety watchman is at the job sight before anyone enters the vessel.	All spills need to be contained. You may need a tyvek suit, Face shield, and a respirator.
3.	Use air monitor to check the air in the confined space.	Be sure to properly document the air monitor reading on the confined space entry document.	

Installing trays to (LGS) Lamella Units.

NOTE

Be careful when installing trays to the lamellas so as not to have Acid solid drip in an eye or on your skin. If this should happen be sure to wash it off immediately.

4.	Enter the bottom of the Lamella.	In entering the bottom of the Lamella the safety watchman is there and the confined space entry permit is in place. This operator's main job is to help keep the bottom of the trays tightly together so they don't slide apart. If this should happen you will not be able to get all the trays back in the Lamella.	Tyvek suit, Face shield, and a respirator.
5.	Install the trays to the Lamella.	Once the tray has been removed be sure to stack them neatly out of the walkway.	Be aware of pinch points and back strain. Always have help when doing this.
6.	Install bottom door.	After all trays are installed be sure all the tools and equipment are out before installing the door.	
7.	Set the Lamella up to be brought unto service.	Verify the bottom valve, bottom blank, etc.	

Training Notes:

1. Use of proper PPE when doing any job.
2. Proper way of installing a lamella tray.
3. Notice the respirator designated areas.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS
A-Evaporator Operator
Normal Duties of the Tank Farm.

PHOS-Normal OP-01
03/19/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the A-Evaporator Operator normal duties of the Tank Farm.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. A-Evaporator Operator certified.

Required Documents:

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety toe foot wear• Rubber Gloves• Rubber Boots• Leather Gloves		<ul style="list-style-type: none">• All spills need to be contained.

A-Evaporator Operator Normal Duties of the Tank Farm.

TASKS:

1. Clear and concise Radio Communications.

Steps		Key Points	PPE/Hazards
1.	Coordinate with the B-Evaporator Operator and DAP or Granulation Operator on acid blending.	Flows to Tank 24, Tank 24-A, and Tank 21.	
2.	Coordinate with the Phos Acid DCS Operator and the PPA- DCS Operator for acid flows.	For starting and stopping of the South Tank 12 Pump.	
3.	Start up or Shutdown a Lamella Unit.		
4.	Check the operation of the Lamellas.	Flush Under Flows as necessary.	
5.	Put on or take off boil of a Lamella.		
6.	Check and regulate the Clarifier Underflows.	Condensate wash as needed.	
7.	Check all the Pumps and Motors in the Tank Farm area.	For Vibrations, Noise and Heat.	
8.	Check all Tanks and Lines.	For Leaks.	
9.	Wash out all Tanks as needed.	Refer to washing a Tank procedure.	
10.	Beat out and clean lines.	As needed.	
11.	Condensate wash pumps and piping.	As needed.	
12.	Clean up after clarifier washouts and all general clean ups.		
13.	Write permits, lockout pumps, and valves for maintenance.	Refer to Lock out and Isolations.	

Training Notes:

1. Importance of a clean working environment means a Safe working environment.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

USING PLANT AIR TO BLOW OUT PIPING

PHOS-Startup-01
03/06/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction-using plant air to blow out piping.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. A-evap certified, B-evap certified, C-spinout certified, A-filter certified, and B-filter certified.

Required Documents: Refer to the required shutdown procedure for that particular piece of equipment.

Tools and Equipment: Radio communication, 3/4" air hoses.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear	<ul style="list-style-type: none">• Rupturing 3/4" hose.• Depressurizing hose.	

USING PLANT AIR TO BLOW OUT PIPING

TASKS:

1. Connecting and disconnecting ¼" hose to plant air.
2. Opening valves.
3. Closing valves.

NOTE

WHEN USING PLANT AIR, ALWAYS CONNECT HOSE TO PLANT AIR VALVE AND BLOW ALL MOISTURE OUT OF PLANT AIR PIPING, AND HOSES THAT YOU ARE USING. ALSO BE SURE QUICK COUPLER FITTINGS AND HOSES ARE IN GOOD CONDITION, WITH TWO HOSE CLAMPS PER FITTING END AND YOU USE PINS TO LOCK QUICK COUPLER FITTINGS TOGETHER.

CAUTION

We need to verify that we are not blowing into a tank that is not vented, the formula for force is pressure X area = Force.

Steps		Key Points	PPE/Hazards
1.	Connect an air hose to the plant air valve and the other end to the piping bleed valve.	Install quick coupler pins.	
2.	Isolate the equipment that is to be blown out.		
3.	Open the plant air valve.	Open slowly.	Possible hose rupture.
4.	Open the bleed valve.	Wide open.	
5.	Close the plant air valve.	After air hose has blown the allotted time.	
6.	Close the bleed valve.		
7.	Bring the equipment back in service.	Refer to the start up of that particular piece of equipment.	
8.	Disconnect the air hose.		Use caution hose may be under pressure.
9.	Roll up hoses and store away.		

Training Notes:

1. How to properly blow out piping with the plant air system.

Page 2 of 3

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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

(Phos)

Removing Trays on (LGS) Lamella Units.

Phos-Ops-01
03/01/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform how to Remove trays on (LGS) Lamella Units.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified C-Utility Operator, Certified A evaporator operator, Certified B evaporator, Certified A filter operator and a Certified B filter operator.

Required Documents: Washing (LGS) Lamella units, Lock out Isolation of a Lamella, Confined space entry permit.

Tools and Equipment: Vise grips, Air monitor, and a Alignment bar.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Leather or Rubber Gloves• Hearing Protection• Respirator	<ul style="list-style-type: none">• Chemical burns• Fluorine fumes• Pinch points	<ul style="list-style-type: none">• All spills need to be contained.

Page 1 of 3

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Removing trays on (LGS) Lamella Units.

TASKS:

1. How to remove trays from the lamella.
- 2.

NOTE

When you remove the trays from the lamellas be aware of pinch points. Also be aware that you may or may not need a respirator depending on which Lamella, If it is #1 Lamella it is not a respirator area. But if you are dealing with #3 or #2 Lamellas a respirator is required to be out in the tank farm area.

Steps		Key Points	PPE/Hazards
1.	Verify that the lock out isolation is completed.	Refer to the lock out isolation of a Lamella.	
2.	Verify that the Lamella has been washed.	Refer to the Washing a Lamella Unit Procedure. In this procedure it will cover How to pull the bottom door, which will need to be off to pull and install the trays.	All spills need to be contained. You may need a tyvek suit, Face shield, and a respirator.
3.	Attach the vise grips to the top of one of the trays.	Use a pair of vise grips that has had a washer welded to the top of them. This is so you can use a alignment bar through the washer hole for leverage to pull the tray up and out.	Be aware of pinch points and back strain. Always have help when doing this.

NOTE

Be careful when removing trays from the lamellas so as not to have Acid solid drip in an eye or on your skin. If this should happen be sure to wash it off immediately.

Removing trays on (LGS) Lamella Units.

4.	Remove the tray from the Lamella.	Once the tray has been removed be sure to stack them neatly out of the walkway.	
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Training Notes:

1. Use of proper PPE when doing any job.
2. Proper way of removing a lamella tray.
3. Notice the respirator designated areas.



Conda Phosphate Operations

**OPERATIONS PROCEDURE
ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

Phos Acid
Cleaning a Launder

Phos -Ops-01
09/05/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform the cleaning of a launder.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified Phos Operator.

Required Documents:

Tools and Equipment: Jackhammer, Jackhammer steel, shovel, double jack, Caution tape and tags.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Rubber Gloves• Hearing Protection• Rubber boots• Saranex suit.• Goggles and Face shield	<ul style="list-style-type: none">• H.F. fumes• Splashing Acid• Pinch Points• Falling debris	

Page 1 of 4

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Cleaning a Launder.

• Respirator		
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TASKS:

1. Cleaning a Launder.

NOTE

A Respirator is required before going out on the Tank Farm.

Steps		Key Points	PPE/Hazards
1.	Flag off all areas under the launder where chunks will be shoveled.	Use RED flagging tape for this.	
2.	Reduce the flows going down the launder to a minimum.	Reducing all the over flows back to a minimum will achieve this task. This will reduce the probability of splashing acid. Also communicate with the DCS operator to maintain the flow rate through the Evaps.	Respirator.

CAUTION

When cleaning the Launder use of proper PPE is needed. Be aware of splashing hot acid, pinch points, and inflicting excessive damage to the launder.

3.	Use a double jack to gently beat the build-up off the sides of the launder.	This is done by beating the outside of the launder	Face shield/Splashing acid. Pinch Points
4.	Jackhammer the build up out of the launder.	Use a jackhammer if the double jack does not work to loosen the build-up in the launder.	Face shield/Splashing acid. Pinch Points
5.	Use a shovel to remove the chunks of build up out of the launder.	This is to prevent the chunks of build-up from going into the tank and plugging the pumps or causing	

Cleaning a Launder.

		damage to the pumps.	
6.	When complete put all flows back to normal.	Contact the DCS to help with this.	
7.	Inspect launder for holes and leaks.		
8.	Clean-up area.	Dispose of flagging tape properly. Shovel chunks of build up into a wheelbarrow and dispose of in concrete dumpster on the east side of the Phos building.	

Training Notes:

1. Use of proper PPE.
2. Use of a respirator in a respirator area.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

811-E Grade Control Floc Metering Pump Speed for 52% Clarifier

PHOS-Normal Op-01
02/17/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how operate the Floc Metering Pump Speed to the 52% Clarifier (811-E) System.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be A-Evap Operator certified. Must have a working knowledge of the DCS side of the controls and how the metering pumps work.

Required Documents: MSDS on 811-E.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear	<ul style="list-style-type: none">• Nox• Check in with DCS Operator before entering Grade Control area.	<ul style="list-style-type: none">• All spills need to be kept in containment area.

811-E Grade Control Floc Metering Pump Speed for 52% Clarifier

TASKS:

1. Checking the speed of the Floc Pump.
2. Checking the percent mix of the Floc.

Steps		Key Points	PPE/Hazards
1.	Open valve to the Graduated Cylinder.	Qualified Operator will open the 1" Ball Valve to the Graduated Cylinder.	
2.	Fill the column up to 1,892 mls from the 10,000 mls mark.	Qualified Operator will fill the cylinder to the desired amount.	
3.	Close the 2" Suction Valve on the Day Mix Tank.	Qualified Operator will close the 2" Suction Valve on the Day Mix Tank for the 52% Floc Pump.	
4.	Turn on the 52% Floc Metering Pump.	DCS Operator or qualified Operator will start the Floc Metering Pump. Graduated Cylinder should empty down to the 10,000 mls mark within 1 minute.	

NOTE

Let the pump finish emptying out of the Graduated Cylinder so it does not set up.

5.	Close the 1" Ball Valve to the Graduated Cylinder.	Qualified Operator will close the 1" Ball Valve to the Graduated Cylinder.	
6.	Open the 2" Ball Valve on the Suction Header.	Qualified Operator will open the 2" Ball Valve on the Day Mix Tank for the 52% Floc Pump Suction Header and let the pump run if desired.	

811-E Grade Control Floc Metering Pump Speed for 52% Clarifier

NOTE

If the timing is slow or fast, communicate with DCS to speed up the VFD on the 52% Metering Pump.

The 52% Pump should run around 9% VFD (Variable Frequency Drive) at ½% of Floc Mix.

Training Notes:

1. This will determine how much Floc will be used.
2. This will determine how often it is necessary to order Floc.
3. This will determine if at the right percent mix of the Floc.
4. All of this directly determines the Solids Control.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Preparing an Evaporator or Super Unit for Tube Bundle Inspection

PHOS-Normal Op-01
02/17/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to prepare an Evaporator or Super Unit for Tube Bundle Inspection.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be A-Evap Operator certified.

Required Documents: Procedures for Shutting Down an Evap or Super Unit, and Procedures for Blasting. Entry Permit. Procedures for Lockout Isolation and Procedures for Water Blasting with a Foot Pedal and Snake, and Procedures for Boiling an Evaporator.

Tools and Equipment: Radio communication, Impact Gun, sockets, wrenches, Channel Locks, Chain fall, light and cord.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear	<ul style="list-style-type: none">• Pinch Points	

Preparing an Evaporator or Super Unit for Tube Bundle Inspection

TASKS:

1. Pulling Evap or Super Unit Inspection Doors.
2. Isolation and Lockout of Feed Pump.
3. Use of tools. (Impact Gun, Impact Sockets, Wrenches)
4. Use of Chain fall.
5. Setting up light and cord.

Steps		Key Points	PPE/Hazards
1.	Shut down Evaporator or Super Unit.	Refer to Normal Shutdown of An Evaporator or Super Unit.	
2.	Rinse Evaporator or Super unit with pond water.	Refer to Normal Shutdown of An Evaporator or Super Unit.	
3.	Lock out Feed Pump.	Refer to Lockout Isolation Procedure.	
4.	Pull top Tube Bundle Inspection Door or lid.		
5.	Check Tube Bundle for plugged tubes.	Field Operator.	

NOTE

Refer to Procedures for Water Blasting with a Foot Pedal and Snake.
Operator will need to set-up Water Blaster ahead of time.

6.	Blast all plugged tubes.	Refer to Water Blasting Procedure.	
7.	Open Belly Door or Snell blank.	Inspect and scrape all debris accumulated in belly.	

NOTE

Once cleaning, blasting, and inspections are complete, close all doors, pull all locks, and prepare the Evaporator or Super Unit for filling for boil-out.
Refer to the Procedure for Boiling an Evaporator or Super Unit.



Conda Phosphate Operations

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DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

How to Adjust the 30%, 42%, and 52% Floc Mixing Machine

PHOS-Normal Op-01
02/07/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform adjustments to the 30%, 42%, and 52% Floc Mixing Machine.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified. Required to check with DCS Operator for Nox before entering and when leaving Grad Control Area.

Required Documents: MSDS on 811-E and 869-E.

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear		<ul style="list-style-type: none">• Pond Water spills need to be kept in containment area.

How to Adjust the 30%, 42%, and 52% Flocc Mixing Machine

TASKS:

1. Adjusting Flocc Mixing Machine.

Steps		Key Points	PPE/Hazards
1.		By volume of Flocc.	
2.	Read the water flow in GPM.	Gallons per minute.	
3.	Multiply GPM by 3.785.	To get liters per minute (Convert gallons to liters)	
4.	Multiply by 5.	To get the milliliters per minute of Flocc from the Draw Down Column.	
5.	Draw down Cylinder.	For 1 minute.	

NOTE

EXAMPLE:

20 GPM	X	3.785	=	75.7	Liters per Minute
75.7 LPM	X	5	=	378.5	Milliliters per Minute

NOTE

RECOMMENDED DOSAGE WITH 300 GPM OF FLOW

15 PPM = 1 GPM of ½% Flocc Solution

30 PPM = 2 GPM of ½% Flocc Solution

(PPM = Parts Per Million)

6.	Expect the optimum dose to be in the range of 15-30 PPM.	(PPM) Parts per Million	
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Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations

Standard Operating Procedures

Phos Acid

Boil Out of a 30% Clarifier

Phos Acid-Normal Operations-01

12/17/2003

Reviewed by: _____

Date: _____

Objective: Provide operating personnel with step-by-step instruction on how to boil out a 30% Clarifier.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be A-Evap certified.

Required Documents: Tank #13 Boil Out procedure. Taking a 30% Clarifier out of service procedure.

Tools and Equipment: 3" Reinforced Hose and Fittings, Condensate Hose and Fittings, Danger Tape with appropriate tags, and barricades for Condensate in use.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear• Face Shield• Saranex Suit• Rubber Gloves• Rubber Boots	<ul style="list-style-type: none">• Thermal Burns• Acid Burns	All spills must be kept in containment area.

Boil Out of a 30% Clarifier

TASKS:

1. Opening and closing valves.
2. Handling hoses.
3. Starting Condensate and stopping Condensate.
4. Setting up barricades.
5. Setting up Danger Tape and tags.

Steps		Key Points	PPE/Hazards
1.	Take the 30% Clarifier out of service.	Refer to the procedure for taking a 30% Clarifier out of service.	
2.	Drain Clarifier.		
3.	Set up hoses to run boilout water from #1 Belt, #2 Belt, or 24-C Filters to the desired Clarifier.		
4.	If using evaporator boilout water: 4a. Have SPA close the Carwash valve going to the sump. 4b. Align hose to the desired Clarifier. 4c. Open valves at the D.B.Box going to the Clarifiers. 4d. Align hose from the evap product to the Carwash line.		
5.	Close the valve to the Underflow pump.		
6.	Open the wash valve to let some boilout water continuously flow out.		
7.	Start filling the Clarifier with Filter wash water or Evaporator boilout water.		
8.	Start the Clarifier Rake.		
9.	Let water overflow into the ring header.	Depending on the Clarifier, the ring header will overflow into Tank #13 or 30% Clarifier Overflow tank	
10.	Follow the procedure for Tank #13 boilout or 30% Clarifier Overflow tank boilout.		

Boil Out of a 30% Clarifier

NOTE

The next steps are to be followed after the Clarifier has boiled for the allotted amount of time.

11.	Shut down Clarifier rake.		
12.	Pull all boilout water flows from the Clarifier.		
13.	Drain the Clarifier and tank.		

Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



Conda Phosphate Operations

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

Monitoring the Cooling Water Through the SPA Cooler

PHOS-Normal-01

02/13/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to perform the normal operations for monitoring the Cooling Water through the SPA Cooler.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be DCS Operator certified. Must be A-Evap Operator certified.

Required Documents:

Tools and Equipment: Radio communication.

Normal Operating Procedures for Monitoring the Cooling Water through the SPA Cooler

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety glasses• Work gloves• Hearing protection• Safety toe footwear		

TASKS:

1. Monitoring equipment.

NOTE

This system is monitored and controlled by DCS.

Steps		Key Points	PPE/Hazards
1.	Set Cooling Water Temperature Controllers.	DCS controlled.	
2.	Monitor Conductivity Meters.	For contamination of PPA's Cooling Tower Water System.	
3.	Monitor equipment.	DCS controlled.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

811-E Grade Control Floc Metering Pump Speed for 42% Clarifier

PHOS-Normal Op-01
02/17/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step by step instruction on how to operated the 811-E Grade Control Floc Metering Pump Speed for 42% Clarifier.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. Must be A-Evap Operator certified, Day B operator certified. Must have a working knowledge of the DCS side of the controls and how the metering pumps work.

Required Documents: MSDS on (811-E).

Tools and Equipment: Radio communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hardhat• Safety Glasses• Work Gloves• Hearing Protection• Safety Toe Footwear	<ul style="list-style-type: none">• Nox• Check in with the DCS Operator before entering Grade Control area	<ul style="list-style-type: none">• All spills need to be kept in containment area.

811-E Grade Control Floc Metering Pump Speed for 42% Clarifier

TASKS:

1. Checking the speed of the Floc Pump.
2. Checking the percent mix of the Floc.

Steps		Key Points	PPE/Hazards
1.	Open valve to the Graduated Cylinder.	Operator will open the 1" Ball Valve to the Graduated Cylinder.	
2.	Fill the Graduated Cylinder up to 3,785 mls from the 10,000 mls mark.	Operator will fill the cylinder to the desired amount.	
3.	Close the 2" Suction Valve on the Day Mix Tank.	Operator will close the 2" Suction Valve on the Day Mix Tank for the 42% Floc Pump.	
4.	Turn on the 42% Floc Metering Pump.	DCS Operator or qualified Operator will start the Floc Metering Pump. Graduated Cylinder should empty down to the 10,000 mls mark within 1 minute.	

NOTE

Let the pump finish emptying the Graduated Cylinder so it does not set up.

5.	Close the 1" Ball Valve to the Graduated Cylinder.	Operators will close the 1" Ball Valve to the Graduated Cylinder.	
6.	Open the 2" Ball Valve on the Suction Header.	Operators will open the 2" Ball Valve on the Day Mix Tank for the 42% Floc Pump Suction Header and let the pump run, if desired.	

811-E Grade Control Floc Metering Pump Speed for 42% Clarifier

NOTE

If the timing is slow or fast, communicate with DCS to speed up the VFD on the 42% Metering Pump.

The 42% Pump should run around 22% VFD (Variable Frequency Drive) at ½" of Floc Mix.

Training Notes:

1. This will determine how much Floc to use.
2. This will determine how often Floc will need to be ordered.
3. This will determine if at the right percent mix of the Floc.
4. All of this directly determines the Solids Control.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures
Phos Acid
High-High Alarm on Tk. #51

Phos-Normal-02
12/11/03

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on what to do when Tk. #51 High-High alarm goes off.

Requirements: The DCS Operator is the primary controller. They will implement all start-ups/shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS Operator with communication from the Field Operators. Must be A-Evap certified.

Required Documents: N/A

Tools and Equipment: N/A

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Leather Work Gloves• Hearing Protection	<ul style="list-style-type: none">• Hot Phos Acid• NO_x Fumes Operators need to check in with DCS before entering Grade Control. Also verify with DCS that there is no NO _x present in Grade Control. Operators need to check out with DCS when leaving Grade Control.	All acid spills must be kept in containment area.

High-High Alarm on Tk. #51

TASKS:

1. Closing valves.
2. Radio contact with DCS operator.
3. Opening valves.

NOTE

The alarms for Tank #51 are as follows: The high alarm will go off in SPA at four feet below the overflow. The high-high alarm will go off in Phos DCS at one foot below the overflow. The high-high alarm for SPA will go off at TWO INCHES below the overflow.

Steps		Key Points	PPE/Hazards
1.	Verify the High-High alarm for Tk. #51 has gone off.	The High-High alarm is set for one foot below the overflow.	

NOTE

If Tank #51 is not transferring to Tank #52 or Tank #54, check with the SPA operator to verify if a transfer can be started. If a transfer cannot be started, proceed with the next steps.

NOTE

Normally the Cooler Feed pumps are in the off position and the coolers are gravity fed.

2.	Contact the operator in the field to close the block valves on the Cooler Feed pumps.	There will be approx. 90 minutes time before the tank runs over.	
3.	Shut down the Product Transfer pump.		
4.	Instruct the field operator to close the block valves on the Product Transfer pump.		

NOTE

This process will have the SPA Cooler circulating back to itself. This can only be done until the Reactor Tank fills. If the level in Tank #51 has not come down before the Reactor Tank fills, the Super Units will have to be shut down.

Training Notes:

- 1.

Page 2 of 3

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TRAINEE: _____

DATE: _____



Conda Phosphate Operations Standard Operating Procedures

(Phos)

How to collect a water sample

Phos-Ops-01
03/01/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform how to collect a water sample.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified C-Utility Operator, Certified A evaporator operator, Certified B evaporator, Certified A filter operator and a Certified B filter operator.

Required Documents:

Tools and Equipment: Sample bottles, Sample tags

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Rubber Gloves• Hearing Protection	<ul style="list-style-type: none">• Chemical burns• Fluorine fumes	<ul style="list-style-type: none">• All spills need to be contained.

How to collect a water sample.

TASKS:

1. How to collect a water sample from a sample line.
2. Importance of have clean sample bottle.
3. Importance of rinsing the sample bottle out good with the water sample you are sampling.
4. Importance of the label with the correct information on the bottle.

Steps		Key Points	PPE/Hazards
1.	Take a clean sample bottle.	You may have to clean a sample bottle, or take a used sample bottle and wash it out good in the Phos lab before getting a sample.	
2.	Label sample bottle.	Whip dry before attaching label to bottle.	

NOTE

When you get your sample be sure to rinse the sample bottle out good a couple of times with the water in which you are sampling to prevent contamination of the sample or to get a represent able sample of the exact water solution.

3.	Collect your water sample.	This could be done by sampling out of line through a sample spigot.	All spills will need to be contained.
4.	Clean off the out side of the sample bottle.	Need to wipe off the out side of the bottle or clean before taking to the lab.	

Training Notes:

1. Use of proper PPE when doing any job.
2. Good or proper sampling makes a difference in the end results.
3. Notice the respirator designated areas.
- 4.
- 5.



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: _____

DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

DCS Normal Operation of the Fume Abatement system.

PHOS-Normal OP-01
03/18/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform normal operation of the Fume Abatement system.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. DCS certified.

Required Documents:

Tools and Equipment: Radio communication, Telephone and computer.

PPE	Hazards	Environmental Considerations
	<ul style="list-style-type: none">• Over heating the catalyst beds.• Letting the catalyst beds get cool.	<ul style="list-style-type: none">• NOX Gas needs to be properly scrubbed before entering the Atmosphere.

DCS Normal Operation of the Fume Abatement system.

TASKS:

1. Maintain operating parameters.
2. Clear and concise radio communication.

Steps		Key Points	PPE/Hazards
1.	Start the fume Abatement system.		
2.	Shutdown the Fume Abatement system.		
3.	Monitor the Fume Abatement burner temperature.	Inlet and outlet temperatures.	
4.	Monitor the NOX levels in the Oxidation area.	Advise personnel if NOX is present to stay clear.	
5.	Monitor the pressure in the Oxidation Reactor. (+Or-)	Advise personnel if NOX is present to stay clear.	
6.	Monitor the Oxidation scrubber tank level.	Maintain water inlet flow.	
7.	Monitor the cooling tower water flow going into the Heat Exchangers for the Fume Abatement system.	To monitor the PH and temperature.	
8.	Monitor the Oxidation area sump.	Notify the field operator if the sump needs to be pumped down.	
9.	Advise the field operator to check air intake screens occasionally.	Clean as necessary.	



Conda Phosphate Operations

OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

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Conda Phosphate Operations
Standard Operating Procedures

PHOS

DCS Normal Operation of the Grade Control.

PHOS-Normal OP-01

03/18/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform normal operation of the Grade Control.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. DCS certified.

Required Documents:

Tools and Equipment: Radio communication, Telephone and computer.

PPE	Hazards	Environmental Considerations
	<ul style="list-style-type: none">Tank levels getting too high, or too low.	<ul style="list-style-type: none">Acid needs to be kept contained.

DCS Normal Operation of the grade control.

TASKS:

1. Maintain operating parameters.
2. Clear and concise radio communications.

Steps		Key Points	PPE/Hazards
1.	Monitor tank farm tank levels.	42% tank levels. 52% tank levels. Oxidation Reactor level. Nitric tank level.	
2.	Monitor tank farm clarification flows.		
3.	Monitor tank farm clarification underflows.		
4.	Monitor the Clarifier Rake Amps.	Including the 42% and the 52% Rakes.	
5.	Monitor the Floc flow.	Floc flow to the 42%, and the 52% clarifiers.	
6.	Monitor the Oxidation Reactor tank temperature.		
7.	Monitor the Oxidation Reactor EMF and adjust the Nitric acid accordingly.	Monitor on DATA entry screen.	
8.	Monitor NOX levels in the Oxidation Reactor.	Alerts operators of dangerous NOX levels.	
9.	Monitor the cooler feed flow.	Have the field operator hook up to plant air and blow into the Reactor as Needed.	



Conda Phosphate Operations

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Conda Phosphate Operations
Standard Operating Procedures
(Phos)

Assist on all Filter Washes.

Phos-Ops-01
02/24/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform how to assist on all filter washes.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator with communication from the field operators. Certified C-Utility Operator, Certified Day B operator, and Certified B filter operator.

Required Documents: Filter wash Procedure, and Lock out Isolation procedure for the filter being worked on.

Tools and Equipment: Radio Communication, and Channel locks.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none">• Hard Hat• Safety Glasses• Safety Toe Foot Wear• Leather or Rubber Gloves• Hearing Protection	<ul style="list-style-type: none">• Chemical burns• Thermal burns• Fluorine fumes• Phos Acid fumes	<ul style="list-style-type: none">• All spills need to be contained.

Assist on all Filter Washes.

TASKS:

1. Review the filter wash procedures.
2. Check in with the A or B filter operator.
3. Be sure to lock out on the proper lock out box.
4. Assists on the filter wash were ever needed.

NOTE

Before starting any job be sure you are locked out on the right piece of equipment, verify by lock tag and try and check in with the A or B operator.

Steps		Key Points	PPE/Hazards
1.	Report to the A or B Filter operator.	You will need to report to the A or B filter operator to find out what you will need for safety equipment as well as what job tasks he will need your assistance on.	
2.	Lock out the Lock out box.	You will need to report to the A or B filter operator to find out where the lock out box is and to make sure it's ready.	
3.	Verify the tools and equipment needed for the job.	You will need to report to the A or B filter operator to find out what tools and equipment will be needed.	
4.	Verify the Personal Protective Equipment that is required to do the job.	You will need to report to the A or B filter operator to find out what Personal Protective Equipment is required to do the job.	
5.	Review the filter wash procedure before starting.	Refer to filter wash procedure.	Same as the filter wash procedures.

Assist on all Filter Washes.

Training Notes:

1. Use of proper PPE when doing any job.
2. Notice the respirator designated areas.



Conda Phosphate Operations

**OPERATIONS PROCEDURE
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DATE: _____

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Conda Phosphate Operations
Standard Operating Procedures

PHOS

DCS Normal Operation of the Enclosed Loop.

PHOS-Normal OP-01

03/18/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform normal operation of the Enclosed Loop.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. DCS certified.

Required Documents:

Tools and Equipment: Radio communication, Telephone and computer.

PPE	Hazards	Environmental Considerations
	<ul style="list-style-type: none">• Over pressuring the Enclosed Loop.• Tank levels getting too high, or too low.	<ul style="list-style-type: none">• Pond water needs to be kept contained.

DCS Normal Operation or the Enclosed Loop.

TASKS:

1. Maintain operating parameters.
2. Clear and concise radio communications.

Steps		Key Points	PPE/Hazards
1.	Monitor the Cooling Tower water pressure.	Inlet and outlet pressure on the Heat Exchangers.	
2.	Monitor the Cooling Tower water temperature.	Inlet and outlet temperature on the Heat Exchangers.	
3.	Monitor the pond water pressure to the Heat Exchangers.	Inlet pressure through the Strainers. Inlet and outlet pressure to the Heat Exchangers.	
4.	Monitor the Pond water temperature.	Inlet and outlet temperature to the Heat Exchangers.	
5.	Monitor the pond water Enclosed Loop seal tanks levels.	#1 Super Unit Seal Tank. 4&5 Seal Tank. 6&7 Seal Tank.	
6.	Monitor the motor Amps on all of the Enclosed Loop seal tanks.	#1 Super Unit Seal Tank. 4&5 Seal Tank. 6&7 Seal Tank. Intercondenser booster pump.	



Conda Phosphate Operations

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DATE: _____



Conda Phosphate Operations
Standard Operating Procedures

PHOS

DCS Normal Operation of the Tank Farm.

PHOS-Normal OP-01

03/1/8/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform normal operation of the tank farm.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. DCS certified.

Required Documents:

Tools and Equipment: Radio communication, Telephone and computer.

PPE	Hazards	Environmental Considerations

DCS Normal Operation of the Tank Farm.

TASKS:

1. Maintain operating parameters.
2. Clear and concise radio communication.

Steps		Key Points	PPE/Hazards
1.	Monitor the Tank Farm Tank levels.	<ul style="list-style-type: none">• 30% Tank Levels.• 42% Tank Levels.• Tank 47 or Super acid feed.• 52% Tank Levels.• Over flow tanks.• Oxidation Reactor Tank Levels.	
2.	Monitor Tank Farm Clarification flows.		
3.	Monitor Tank Farm Clarification Under flows.		
4.	Monitor Lamella Under flows.		
5.	Monitor Pump and Motor AMPS.		
6.	Monitor Clarifier Rake AMPS.		

Training Notes:

1. The importance of monitoring all equipment and alarms constantly.



Conda Phosphate Operations

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Conda Phosphate Operations
Standard Operating Procedures

PHOS

DCS Normal Operations of Tank 21 and Tank 24 for
Granulation feed.

PHOS-Normal OP-01
03/19/2003

Reviewed by: _____

Date: _____

Objective: To provide operating personnel with step-by-step instruction on how to perform normal operation of Tank 21 and Tank 24 for Granulation feed.

Requirements: The DCS operator is the primary controller. They will implement all startups / shutdowns of any equipment, and monitor all areas of the PHOS department. The adjustments need to be made by the DCS operator. DCS certified.

Required Documents:

Tools and Equipment: Radio communication, Telephone and computer.

PPE	Hazards	Environmental Considerations

DCS Normal Operation of Tank 21 and Tank 24 for Granulation feed.

TASKS:

1. Maintain operating parameters.
2. Clear and concise Radio Communications.

Steps		Key Points	PPE/Hazards
1.	Monitor Tank 21 level.		
2.	Monitor Tank 21 specific gravity.		
3.	Monitor Tank 24-A overflow Tank level.	<ul style="list-style-type: none">• Acid will overflow into Tank 20-A.• Tank 24-A pumps to an evaporator with product back to Tank 21 only.	
4.	Monitor Tank 26 level.		
5.	Monitor Tank 26 acid and control the flow.	To maintain set flow	
6.	Monitor Tank 24 underflow.	To maintain set flow	
7.	Communicate with Granulation.	Maintaining correct grades of acid.	
8.	Review Lab Analysis.	Maintaining correct grades in Tank 24-A and Tank 21-.	

Training Notes:

1. Importance of customer satisfaction and grade control.
2. Importance of customer, client communications.



Conda Phosphate Operations

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